THIS WEEK'S NATIONAL PETROLEUM NEWS

The Recognized Authority on News, Markets and Technical Developments in the Oil Industry

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COMING MEETINGS

American Association of Petroleum Geologists, annual meeting, Tulsa, Mar. 19, 20, 21.

Independent Oil Men's Association, Hotel Lincoln, Watertown, S. D., March 26 and 27.

Oil Trades Association of New York, annual meeting, Waldorf-Astoria, New York City, March 24.

Kansas Oil Men's Assoc., and Kansas Oil Exposition, Broadview Hotel, Wichita, Apr. 1 to 4.

Michigan Petroleum Association, Statler Hotel, Detroit, Mich., Apr. 2 and 3.

American Petroleum Institute, Division of Production, Southwestern District, Washington-Youree Hotel, Shreveport, La., April 9, 10.

Western Petroleum Refiners Association, Elms Hotel, Excelsior Springs, Mo., April 7, 8.

Petroleum Industry Electrical Association, Tulsa, Apr. 11 to 13.

American Chemical Society, Petroleum Division, Kansas City, Mo., Apr. 13 to 17.

American Petroleum Institute, Division of Production, Pacific Coast District, Los Angeles, Apr. 14.

National Oil Burner Show, Convention Hall, Detroit, Mich., April 14 to 18.

American Institute of Mining and Metallurgical Engineers, Open Hearth Conf., Detroit, Apr. 16, 17.

National Petroleum Association, Cleveland Hotel, Cleveland, O., Apr. 16, 17, 18.

Oil Equipment & Engineering Exposition, Petroleum Bldg., Houston, Tex., Apr. 20 to 25.

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John L. Dryer

The leadership of the Independent Petroleum Marketers Association of Oklahoma has been given to a marketer who has been in the oil business for 25 years. John L. Dryer, the association's recently elected president, is a member of the firm of Dryer, Clark & Dryer Oil Co., at Oklahoma City. The company was organized in 1926, and now has a large bulk plant and two retail stations of its own in Oklahoma City in addition to a large number of dealers. Mr. Dryer obtained his first oil marketing experience with the old Waters-Pierce Oil Co., having joined that organization back in 1912

NATIONAL PETROLEUM NEWS

VOLUME 28 NUMBER 12

Program to Promote Safety in Driving Is Launched by Oil Companies

RECENTLY organized, but gathering momentum almost daily, plans are going forward for a co-operative movement by oil companies to promote practical efforts for greater highway safety.

On March 13, seven oil company executives sat in a room at the American Petroleum Institute's headquarters in New York to discuss how the oil industry could most effectively aid the national safety movement to bring about a reduction in the number of automobile accidents.

This group of men, reflecting the industry's recognition of its opportunity to promote driving safety through its continual contact with drivers at service stations, worked out plans which tentatively provide for emphasizing safe driving principles among motorists and for encouraging regular and thorough lubrication, and possibly inspection, of cars at service stations.

As announced in an official statement from the institute, a further contribution will be to instruct filling station attendants to report to car owners any observed mechanical difficulty tending to render unsafe the operation of any car serviced.

Present plans call for an inauguration of the safety effort with a "National Lubricate for Safety Week" to start May 23 and run through May 30, according to the institute statement. Another meeting of executives will be held in New York soon to work out further details of the entire proposed safety program.

It is expected that promotion plans for the opening week of the safety lubrication campaign, as well as the continuation of the program through encouraging regular lubrication will be such that each marketing company may co-operate without materially disturbing its present plans for spring promotion activities. It is understood that an emblem which announces the drive, and which will be used at stations, in company promotion and advertising material, and as stickers in various places, will be considered at the meeting this week.

The program, according to the institute announcement, is based upon the belief that safety-conscious operators and properly functioning vehicles both are essential to highway safety, and that frequent reports on the mechanical condition of cars made possible by regular lubrication will encourage car owners to maintain them in proper and safe working order.

"It is believed also that the safe-driving principles found to be so effective in preventing accidents to oil company automotive equipment will be equally helpful in promoting highway safety generally, and that periodic and regular lubrication will tend to eliminate indirect causes of highway accidents, such as driver fatigue, mechanical failure or breakage, and improper functioning of working parts," says the institute's statement.

"During the past several years the petroleum industry has spent millions of dollars in developing improved lubricants and in establishing adequate and efficient lubricating equipment at its 200,000 road-side service stations. It is now proposed to encourage regular use of these facilities by the motoring public with the idea of promoting both human safety on the highways and the safety of the motorists' investment in their vehicles by preventing undue wear and breakage through regular lubrication and inspection."

This co-operative safety program, conceived within the oil industry, and which over 60 per cent of the large companies are said to have approved, will have the advantage of riding the current of a nationwide publicity campaign on safe driving sponsored by the National Safety Council and similar organizations.

The oil industry has a practical talking point, for it has the tools by which a car may be made safe to drive from an operating standpoint. The oil

company cannot only talk safety to its customers, but it can do something about it, through its facilities for lubricating, inspecting, and replacing of worn tires, batteries, light bulbs, windshield wipers, and other items necessary to safe car operation.

The obligation of the service station in seeing that customers' cars are safe for driving is brought out in a leaflet sent to the 95,000 stockholders of the Standard Oil Co. of Indiana. In this leaflet President Edward G. Seubert points out the opportunity which service station men have to promote safe driving due to their close and constant contact with drivers.

"Standard stations are providing safety service as they dispense fuel and lubricants," states Mr. Seubert. "A car fueled with a gasoline which warms up quickly will not go dead at a dangerous spot near the starting point. A car properly lubricated will not refuse to take the quick turn that an emergency may require.

"Windshields well wiped by service men to afford clear vision," comments Mr. Seubert, are better insurance against accident than a casualty policy. Tires kept properly inflated are not likely to blow out at high speed. And the suggestion from the service man that it is dangerous to use an old tire longer, even though motivated by desire to sell a new tire, may be the means of saving the driver's life—and perhaps his family's."

Sales possibilities for the oil industry's products and services, as a result of greater care of automobiles in the interests of safety in driving, while a secondary consideration in the safe driving movement, are nevertheless very great. Two additional lubrication jobs a year from the 26,000,000 registered cars would increase the gross income of the industry by 50 million dollars. Similarly, two additional crankcase changes per yeaf would gross an increase of about 75 million dollars, and two additional gear lubricant changes would add another 75 million dollars.

It is felt that a co-operative safety campaign such as the one proposed, if unselfishly handled, will enlist the good will of the car owner and reflect to his advantage, and in addition will serve as a powerful means of getting him to form the habit of having his car serviced at regular intervals.

The automobile industry has devoted much thought and expense to building safer automobiles, and its activity in promoting safety has not stopped there. Some car makers are paying dealers to junk old cars that are turned in on trade. Others, through their dealers, are offering owners safety inspection services.

Oldsmobile, on April 1 will launch its third annual "Points of Safety Inspection Drive". This campaign is for the purpose of interesting owners in driving cars that are mechanically safe. The service will be available through 3500 dealers during April and May, and it is expected that 300,000 car owners will use the service.

THE Oldsmobile safety inspection includes six points that are usually subjected to the most wear and tear, brakes, lights, horn, steering gear, tires, and windshield wiper. It is pointed out that the severe weather during the last winter has been hard on cars, offering an unusually good reason why a safety inspection should be made this spring.

Although the preparation of the oil industry's safety lubrication campaign has centered thus far about the larger oil companies, the effort is by no means a large company project. The opportunity to co-operate is for large and small alike. The plan at present does not call for any contributions to the common program but is simply aimed at getting all oil companies to feature safe driving in their own promotion and at their own stations. The benefits will come to all companies and it is the desire of the committee in charge to get as many companies as possible behind the movement before the beginning of the proposed "National Lubricate for Safety Week".

W. H. Correa, of Socony-Vacuum Oil Co., New York, is chairman of the committee which is making preliminary plans. Members are: Walter Saybolt, Standard Oil Co of New Jersey, New York; L. C. Eldridge, Shell Petroleum Co., St. Louis; H. P. Hobart, Gulf Refining Co., Pittsburgh; F. B. Dow, National Petroleum Association, Washington; Ray Shaw, Chek-Chart Co., Chicago; J. E. Moorehead, Pennsylvania Grade Crude Oil Association, Oil City, Pa.; O. J. Tuttle, Empire Oil & Refining Co., Tulsa; (B. B. Mears, New York, alternate), and Victor H. Scales, American Petroleum Institute.

Western Refiners Plan Annual Convention

By Teletype

Tulsa, March 16.—A program as diversified as the popular "soup to nuts" course will be offered to members of the Western Petroleum Refiners Association at the annual meeting scheduled for April 7 and 8, at Excelsior Springs, Mo.

Presentation and discussion of reports from the committees on tractor, fuel, lubricants, diesel fuel, octane brackets, W. P. R. A. specifications, tank car price postings and road oil will take up most of the afternoon of April 7.

The April 8 session will open with the president's annual address. Following the address, Geo. D. Locke, Barnsdall Oil Co., Tulsa, will offer a resolution memorializing P. M. Miskell, one time president of the Association who died Dec. 25, 1935.

An address on "taxation" will be presented during the April 8 session by Willis Crane, Washington office of the W. P. R. A. to be followed with remarks by Fayette B. Dow, also of the Washington office. Dr. G. G. Brown, University of Michigan, will discuss "alcohol vs. petroleum".

C. E. Arnott, Socony-Vacuum Oil Co., will present an address titled "co-operation". "Social Security Legislation", will be discussed by Ralph Horween, of the Chicago law firm of Topliff and Horween.

Another address will be presented, although details as to the speaker and his subject will be announced later.

The Editor's Viewpoint

The Safe Driving Movement as it Touches the Oil Companies

THE growing public consciousness of the need for safer driving of automobiles as a means for cutting down accidents touches the oil companies in more ways than one. The industry has now recognized this by inaugurating a program, under the sponsorship of the American Petroleum Institute, to develop means for the participation by the oil companies in the safety movement.

The immediate step is a Safety Lubrication week, from May 23 to May 30, to which many oil companies have already given their approval. In this the oil companies individually, in their advertising and sales efforts in connection with the spring conditioning of cars, will tell of the importance of thorough lubrication for safe driving. This is to be followed by efforts on the part of the companies to induce people to have their cars lubricated more regularly as a means of keeping them in better mechanical condition.

The oil company, large or small, can be a most important factor in any safe driving movement because of its close contact with the driving public. It is a more important factor in this regard than the automobile manufacturer or its service agency. Every oil company, however, should give a great deal of thought and study to the method of its individual participation in any safe driving campaign, whether it is that now being sponsored on behalf of the oil industry itself or of any other origin.

The first consideration in the program of any oil company must be the interest of the public. Any commercial advantage to come to the company through the sale of its services or merchandise must be secondary to the furthering of the protection of the public on the highways, unless the company is to risk the possibility of a backfire of public opinion in its community. "Lubricate for Safety" is not to be confused with "Say it with Flowers," or other slogans of a similar nature which have been highly commercialized. The public's mind, it seems likely, would revolt at the attempt of anyone to primarily look for commercial advantage in the safe driving movement. The oil companies participating in the oil industry's program just announced must study carefully their handling of the subject in their advertising and sales efforts.

The "Lubricate for Safety" part of the program does offer to the oil industry the opportunity to get back some of the lubrication business it has lost as people became careless about the maintenance of their cars and as more and more oil companies played up that their oils would run 1000 or 2000 miles or more without the need for changing. However, participation by the individual oil company entails the responsibility of doing a thorough job at the station and its price should certainly be such as will allow it to do the work in the proper manner. It cannot be done on any "free lubrication job with a change of oil" basis.

Where any company goes further and considers an inspection of the mechanical fitness of any parts in connection with its lubrication service, there are many more points to consider, not the least of which is its moral responsibility to the driver. A good service man *may* discover a mechanical defect in the customer's car when it is on the lift to be lubricated. But few oil companies will want to take the responsibility of advertising that inspection during lubrication *will* discover such defects.

ANOTHER point in which the safe driving movement touches the oil companies is in the sale of gasoline at stations to intoxicated drivers and this particularly may become a ticklish subject for the oil company either way it handles the situation. It would seem inadvisable for any company, without great study and competent legal opinion, to issue a blanket order that intoxicated drivers cannot be sold gasoline at its stations. Many a lawsuit has resulted from the charge an individual was drunk, where there was much more expert testimony on the subject offered in the case than a station man could give, particularly where the other witnesses would likely be those in the car with the driver who was refused the purchase of gasoline.

Even where there is a local ordinance on the subject and these are now being proposed, the burden of proof would still be on the station man to establish the fact the driver who was refused the sale was intoxicated. On the other hand, where the station man made a sale to a driver who obviously was not in condition to operate a car and an accident resulted, some feeling might result toward the oil company.

In general it would seem that, in this matter, the oil company should avoid arbitrary instructions to station men and pretty much leave it up to the man's judgment in the individual case.

Disclose the Facts or Shut Up, Senator!

SENATOR BORAH indulged in a bombastic falsehood against the oil industry when he charged that the "Standard Oil Company" sought to influence the selection of the Oklahoma delegates to the Republican national convention.

It is not the first time the senator has sounded off against our industry in the same windy but vague fashion, basing his alleged charges on information he claims was brought to him and promising the specific facts to back up his charges at some future and equally vague time, which, however, never materializes.

While Borah did not mention by name in his charges Governor Landon, of Kansas, his opponent as a possible Republican candidate for President, the inference was plain enough; that Landon supported by the Oklahoma delegation would, therefore, be in effect the tool of the major oil interests.

However, when the facts as to Landon's record as an oil operator participating in oil industry issues are gone into, they bring to light one instance in which the windy senator is not in an enviable light as regards his records on a most important issue as far as the oil industry was concerned of a few years ago, that of a limitation on imports of crude oil to bring relief to the thousands of small oil producers in this country.

Borah's stand on the issue of a limitation on imports is described in a telegram to NATIONAL PETROLEUM NEWS from Wirt Franklin, president of the Independent Petroleum Association of America, the organization of the small independent operators, sent in answer to a wire from us regarding Borah's charges. Franklin's telegram is as follows:

"Regarding Borah's statement inferring that Governor Landon was being supported by an under domination of monopolistic oil interests, nothing could be farther from the truth than this alleged statement of Senator Borah. The fact is that Landon has been an active director of the Independent Petroleum Association of America for the last five years and was especially active in aid of a tariff or excise tax on imported petroleum and the limitation of imported oil, coming to Washington frequently to assist therein.

"Landon was chairman of a committee of 15 at the governors' oil conference with Secretary Ickes in March, 1933, and took a leading part in securing an agreement for limitation of imports, which was continued under the oil code. Landon has shown by his actions and the work he has done in behalf of the so-called independent branch of the petroleum industry where he stands and he has not deviated from this course at any time.

"On the other hand, Senator Borah, in 1930, when the tariff bill was pending, voted against a tariff on oil every time the same was voted on in the Senate. While Senator Borah has talked about monopoly and control on the part of the major companies of the oil industry, the only time he had a chance to show where he stood by his actions instead of mere talk, he voted in favor of the four or five large integrated oil companies engaged in importing foreign oil, to the detriment of the independent interests in the oil industry."

The oil industry and its members, every time the occasion arises should promptly declare as lies such charges against the industry as Borah has made. The oil companies as such are not in politics, nor is NATIONAL PETROLEUM NEWS but it will call to account attempts to make false charges against the industry in this or any other connection.

Senate Committee Favors New Code Legislation

WASHINGTON, March 16.—Although the Senate Interstate Commerce Committee voted March 11 to report favorably the Wheeler Bill (S-3744) to broaden powers of the Federal Trade Commission, the bill has not yet reached the floor of the Senate.

The bill was handled somewhat mysteriously by the committee. Pending before the committee was an amendment by Senator King, Utah, specifically authorizing the F.T.C. to solicit the formulation of voluntary codes of fair competition by various industries. Then, when the committee was apparently ready to report the bill, with the King Amendment included, Senator King decided to withdraw it, telling newspapermen that it was a "mistake."

The Wheeler Bill authorizes the F.T.C. to issue cease and desist orders even though there is no proof of injury to a competitor. Under the present law, the commission sometimes has found unfair acts and practices which it regards as injurious to the public without being able to prove that competition is involved. Proof of injury to competition must be shown before a cease and desist order can be issued at present.

The King Amendment was hailed and denounced as a substitute for the NIRA codes. Perhaps that partly explains its author's attitude. Senator King was a bitter critic of the NIRA. His amendment would apparently do little more than specifically authorize the trade practice conference agreements which the FTC has been sponsoring for some years. The commission has been doing this under its general powers to prevent unfair competition. But undoubtedly the commission would like to have its powers in this matter specifically delineated.

A companion measure to the Wheeler Bill, introduced at the same time by Congressman Rayburn, Texas, in the House (HR-10385) is reposing quietly in the House Interstate Commerce Committee.

Record Shows Landon Has Espoused Independent Operators' Cause

By Lawrence E. Smith
N. P. N. Staff Writer

By Teletype
TULSA, March 17

REPLY of the Republican party of Oklahoma to charges made March 14 by Senator Borah, of Idaho, at Washington, was to instruct the state delegation to support Gov. Landon, of Kansas, for the nomination for President.

This action was taken March 16 in the state convention at Oklahoma City. A resolution was adopted putting the delegation under the unit rule and as all delegates at large and a sufficient number previously instructed in district conventions had been pledged to Landon, the 21 votes from Oklahoma will be cast in Cleveland in June for the Kansas governor.

Borah had asserted that Standard Oil, not specifying which company, was working to get an uninstructed delegation in Oklahoma. The implication was that it would thus swing the Oklahoma votes where it pleased. Everyone recognized immediately that it was Borah's oblique way of linking Landon with the Standard interests. This charge was made some weeks ago by Smith W. Brookhart, former Iowa senator, who now occupies a well cushioned New Deal seat.

Borah named William G. Skelly, long-time Republican national committeeman from Oklahoma, who heads the Skelly Oil Co., and James A. Veasey, director and general counsel of the Carter Oil Co., a Standard of New Jersey unit, as the arch conspirators. Skelly's retort was that the Borah statement was too silly to answer, that it was merely Borah's way of trying to keep his own candidacy alive. Veasey retorted that instead of working for an uninstructed delegation, as Borah had charged, he was doing all he could to pledge Oklahoma to Landon.

The charge that Standard interests dominate Republican affairs in Oklahoma is absurd to anyone familiar with the political situation in this state. Republicans are in such helpless minority that never do they win a state office. Only twice have they elected a U. S. Senator and their representation in the lower house of Congress has been confined to one district. Any corporation that sought to gain advantage through political interference in Oklahoma would know enough to get in on the side that wins.

VEASEY has interested himself in affairs of his party as a personal matter. He has been a resident of Oklahoma for around twenty years. He owns property and pays taxes and is regarded as one of the outstanding citizens of Tulsa. He exercises his right to work through his party for good government. Skelly's case is similar. Neither has gained for his company any benefits not enjoyed by the smallest oil operator in the state.

But it is now evident that the worn-out issue of Standard Oil will be raised in this year's national campaign. Borah, as many will recall, has brought out that bogieman at intervals for years. To the Borahs and the Brookharts any oil man is a Standard Oil man.

Governor Landon is an independent oil operator and has been from the time he first engaged in the business soon after completing his education at the University of Kansas. Immediately after New Dealer Brookhart popped off with his charge linking Landon with the Standard, numerous independent producers came forward to testify that Landon had always lined up with the independents in any of the many battles within the industry involving the large interests and the smaller operators.

The principal fight in recent years has been over the tariff, or excise tax on oil. This fight was carried on by the independents through the Independent Petroleum Association of America, organized by Wirt Franklin. Landon has been a director of that association since April, 1931.

The independents won that fight against the opposition of the importing companies and Senator Borah. The record shows that Borah voted against every proposal to impose a tax on foreign oil.

In January, 1931, Landon went to Washington as one of a group of independents seeking a tariff or other form of restriction on imports. He remained as one of this executive committee named by Wirt Franklin to manage the campaign on the same issue. In March of that same year, Landon represented Governor Harry Woodring, Democrat, of Kansas at a meeting held in Fort Worth. This meeting was sponsored by Governor Murray, Oklahoma, long a Standard Oil baiter. Landon joined in a telegram to President Hoover urging action on the imports question.

The situation of independent oil producers was then one of acute distress. Prices were far below cost of production and, due to the withdrawal of the Prairie Oil & Gas Co. as a buyer of crude, thousands of stripper wells in southern Kansas and northeastern Oklahoma lacked outlet. Landon jumped in on that battle, urging state and federal officials to act on behalf of the producers. Relief was finally given by several purchasers after weeks of heated argument.

The Federal Oil Conservation Board, after receiving numerous delegations of independent producers and refiners, agreed to hold a conference with the Oil States Advisory Committee, which body consisted of representatives appointed by governors of nine states. The meeting was set for April and on March 25, 1931, NATIONAL PETROLEUM NEWS made this comment:

"Hovering over that meeting

will be specter of prosecution under the Sherman anti-trust law, raised by Senator Borah. . . . Borah expressed the opinion, just about the time arrangements were made for the hearing, that to place a limitation on imports of petroleum would be a violation of the anti-trust law."

In that same year, on July 27, Landon was one of the speakers at a mass meeting of independent oil operators in Tulsa. This was immediately preceding the martial law proration enforcement in Oklahoma City and East Texas and crude oil prices were at starvation levels. Landon on that occasion urged the support of a movement in Kansas to buy petroleum products only from non-importing companies and "especially from companies which try to maintain a semblance of a living price."

Landon was one of the oil men who asked the Kansas legislature in 1931 to enact a conservation law providing for production control and lining that state up with Oklahoma and Texas. The law was passed. He was insistent upon that provision of the law which exempted stripper wells from proration, in the interests of the small operators.

WIRT FRANKLIN'S assertion in Oklahoma City March 16 that there is no longer the threat of a monopoly in the oil business is the utterance of the outstanding leader of the independents in recent years. He said that the Standard has accepted virtually all of the independent program.

Borah, challenged by the Wichita Beacon, weaseled neatly. He denied that he had attacked Landon, said he was merely trying to drive Standard influence out of Oklahoma Republican politics and "give the people of Oklahoma a chance to select their own delegates."

Nobody knows what this means. Oklahoma does not use the pre-convention preferential primary system and delegates are chosen through the party convention system. This year's delegation to the national convention includes three oil men. They are Lew H. Wentz, Ponca City, Wirt Franklin and former Senator William B. Pine. All are independent producers.

Borah's original statement was based, he claimed, on information given him by "leading Republicans in Oklahoma". Wentz retorted to this that he would like to know "the supposed to be reputable Oklahoma citizens who are responsible for this bunk. I doubt if they exist."

Asks Pennsylvania to Join Interstate Compact

NEW YORK, March 13.—The Commonwealth of Pennsylvania should participate in the interstate oil compact, Axtell J. Byles, president of the American Petroleum Institute, told the American Institute of Banking's Pittsburgh chapter in an address there last night.

Mr. Byles characterized the compact as the "democratic, as distinguished from the bureaucratic; the economic, as distinguished from the political, way of solving our problem." He stated that the application of sound conservation policies, through the compact, would prevent price collapses caused by wild orgies of production and at the same time tend to defer high prices resulting from unnecessary and uneconomic depletion of petroleum reserves.

Commenting on attempts to enact legislation designed to make mandatory the adulteration of gasoline with alcohol for motor fuel, Mr. Byles said that the scheme would add more than $800,000,000 to the nation's fuel bill, of which the farmers would pay over $200,000,000.

Mr. Byles called attention to the attempts of railroad interests to impose uneconomic and unnecessary restrictions upon highway transportation, and the efforts of certain elements of the coal industry by law to eliminate competition from fuel oil. "No enduring prosperity is achieved by the efforts of one industry, through legislative interference, to build itself up at the cost of another," he continued. Instead, the different industries should try to remove unwarranted limitations upon the operations of all, thus permitting each to render its fullest service, Mr. Byles said.

Daily Average Production, Important Districts, American Petroleum Institute Figures

	Week Ended Mar. 14 Barrels	Mar. 7 Barrels
Okla. City	120,800	107,500
Total Okla.	514,750	473,200
East Texas	439,800	437,450
Total Texas	1,106,100	1,102,050
Rodessa	36,300	36,350
Total Louisiana	192,750	191,150
California	566,600	569,200
East of Rockies	2,241,750	2,189,450
Total U. S.	2,808,350	2,758,650
Crude Imports	95,000	90,710
Total New Supply	2,903,350	2,849,360

Asks Tax Exemptions For All Co-ops.

WASHINGTON, March 16.—Exemption of all co-operative associations from payment of the federal income tax is proposed in a bill (HR 11775) introduced by Congressman Scott, of California, and referred to the Ways and Means Committee. Under the present law the exemption extends only to agricultural co-operatives.

Congressman Scott is the author of the bill (HR 10799) proposing to establish a Consumers' Advisory Council with a $75,000,000 revolving fund for loans to assist consumer co-op. associations in the producing and marketing of all commodities.

Frank Chase Improves

TULSA, March 14.—Frank L. Chase, official of the Lone Star Gas Co., Dallas, and past president of the Natural Gasoline Association of America, is reported here to be recovering satisfactorily from a recent severe illness. He is now able to be out of bed a portion of the time although not sufficiently recovered as yet to return to his office.

"Employe" Question Again Bobs Up As Payroll Tax Rules Are Issued

By A. M. Petty
N. P. N. Staff Writer

WASHINGTON, March 14

THE oil industry is again confronted with the question of who is an "employe" in the new regulations, issued today by the Internal Revenue Bureau, covering the unemployment-compensation provisions of the federal social security law.

It is an important question because on its determination rests the liability to pay the federal payroll tax of one per cent which went into effect Jan. 1, 1936 (although not due and payable until Jan. 31, 1937).

Under the defunct oil code the Petroleum Labor Policy Board sought to make supplying companies responsible for maintenance of code wages and hours at their leased stations by declaring that the operators of such stations were "employes," if certain conditions existed.

The contention that operators of leased stations were "employes" and not "agents" was made by the West Virginia attorney general in arguing the Ashland Refining Co. "chain-store" tax case before the U. S. Supreme Court. The Court March 2 ruled, in effect, that the Ashland company and Gulf Refining Co. "controlled" their lease and agency and lease and license stations, respectively, so as to render them subject to the "chain-store" tax just as if they were company-operated stations.

The definition of "employe" in the social security regulations may mean that supplying companies are liable for the tax on compensation received by their commission agents and operators of their leased stations where the company "controls" operating details.

So, the federal payroll tax, coming on the heels of the Supreme Court's "chain-store" tax decision, may prove to be another nail in the coffin of Lease and Agency.

The words "employ," "employer" and "employe" as used in the social security law, the regulations explain, are to be taken in their ordinary meaning. Whether the relationship of employer and employe exists, will in doubtful cases be determined upon examination of the particular facts of each case.

Internal Revenue Bureau officials expect that the variety of contractual arrangements between oil companies and operators of leased stations and commission agents, together with the varying degree of control exercised over such outlets and distributors, will require much interpretation.

For that reason they would like to receive as soon as possible requests for specific interpretations. Full details of the particular case should accompany requests for rulings, it was said.

Inquiries should be directed to "Commissioner of Internal Revenue, Washington, D., C. Attention: Rules and Regulations Section, Income Tax Unit."

Because the bureau is reluctant to rule on hypothetical cases, officials said that it would be advisable for oil companies to submit complete information on concrete cases, including copies of contracts and other arrangements between the supplier and the person whose status as an "employe" is at issue. Rulings of general interest will be made public from time to time.

Generally the relationship of employer and employe exists, according to the regulations, when the person for whom services are performed has the right to control and direct the individual who performs the services, not only as to the result to be accomplished by the work but also as to the details and means by which that result can be accomplished.

That is, an employe is subject to the will and control of the employer not only as to *what* shall be done but *how* it shall be done, the regulations explain.

"In this connection, it is not necessary that the employer actually direct or control the manner in which the services are performed; it is sufficient if he has the right to do so," the regulations add.

Incidentally, one of the principal points in the Gulf "chain-store" tax case was the short-term cancellation clause. The court apparently believed that this gave the company "control" of the leased station even though it was not invoked.

The regulations point out, however, that if an individual is subject to the control or direction of another merely as to the results to be accomplished by the work and not as to the means and methods for accomplishing the result, he is an independent contractor, not an employe.

On the other hand, if the relationship of employer and employe exist, the designation or description of the relationship is immaterial. For example, if a leased station operator is an "employe" under the Act, it makes no difference that he is called an "independent dealer." Likewise, designation of an "employe" as a commission agent or distributor will not excuse the supplying company from payment of tax on his compensation—whether it be in commission, salary, margins or other

medium, according to the regulations.

The test of whether a leased station operator is a "dealer" or "employe," as well as the status of wholesale distributors paid a stated sum per gallon (commission agents) for making tank wagon deliveries, will be the degree of control exercised over their operations by the supplier. And if the "dealer" or the "commission agent" is held to be an "employe" then his helpers probably will also be classed as "employes" of the supplier.

But there will be dozens of borderline cases. The extent of "control" which the bureau will permit without classing the station operator as an "employe" will become clearer as interpretations and rulings on specific cases are forthcoming.

The rate of tax for the current year is one per cent of the total payroll of every employer in the United States employing eight or more persons. However, this tax is not due and payable until Jan. 31, 1937. Beginning January, 1937, the tax rate will increase to 2 per cent (although again it will not be due until a year later or Jan. 31, 1938). In 1938 and thereafter, the rate will be 3 per cent.

These taxes are under the unemployment - compensation provisions of the social security law. They should not be confused with either the state taxes under state unemployment-compensation laws or with the federal old-age annuity tax which goes into effect Jan. 1, 1937.

The taxes are really to "encourage" the states to enact social security legislation. This is accomplished by granting credits to employers paying state taxes under approved state laws.

In states with laws approved by the federal social security board, employers are permitted to credit against the federal payroll tax (but not more than 90 per cent of the federal tax) the amounts contributed under state unemployment-compensation laws.

Here's how it works out in practice, using an example from the regulations:

On Jan. 15, 1937, M company operating in States A and B, has paid $6200 into the unemployment - compensation fund of A and $3000 into the fund of B. Its return to the Internal Revenue Bureau discloses that $10,000 is due in federal payroll taxes. The company may credit only $9000 (or 90 per cent of the total state taxes paid) against the federal taxes, leaving $1000 due.

Using the same facts, suppose the total paid by M company to both states was only $7500. Because this is less than 90 per cent of the $10,000 federal taxes, the company may deduct the whole $7500 in paying the Internal Revenue Bureau, leaving $2500 due.

ONLY in those states which enact *approved* state laws will the employes obtain unemployment-compensation benefits. All benefits will be paid out of funds collected by the states. Disbursements, however, will be from the U. S. Treasury, all state funds being deposited there in a special account.

In states not enacting an approved law, the employers will be paying the federal tax but their employes will receive no benefits. Conceivably, an employer may pay both federal and state taxes without his employes receiving benefits—this could happen where a state passes a law which is disapproved by the federal board.

Regardless of whether an "employer" is subject to the state law, he is nevertheless subject to the federal tax if within scope of the law and regulations.

To date, nine states and the District of Columbia have enacted state unemployment-compensation laws. All but the law of Utah (which has not been formally submitted) have been approved by the federal social security board. They are: Alabama, California, Massachusetts, New Hampshire, New York, Oregon, Washington and Wisconsin

Unemployment-compensation bills—some of them patterned after the "model" state law drafted by the Social Security Board, have been introduced in several legislatures but to date none has been enacted, according to last word received here.

In the Indiana and Rhode Island, bills similar to the "model" law have passed one branch of the legislature and are now pending in the other branch, the federal board has been advised.

The Virginia and New Jersey legislatures adjourned recently without enacting such laws, although bills were introduced in both states. In Ohio, the legislature has not formally adjourned but is not in session and it is expected that the unemployment-compensation bill is dead unless the governor calls a special session.

The federal tax applies to every person who, beginning Jan. 1, 1936, employs eight or more individuals on a total of 20 or more calendar days during the calendar year, each day being in a different calendar week. In such instances (with certain exceptions) he is an "employer" under the Act.

The weeks in each of which occurs a day on which eight or more individuals are employed need not be consecutive nor is it necessary that they be the same individuals nor that they all be employed at some particular moment of the day. It is sufficient if the total number of individuals employed during the 24 hours of a calendar day is eight or more, regardless of the period of service during that day or the basis of compensation.

However, there are certain excepted classes of employes which are excluded for the purpose of determining whether a person employs eight or more persons and of computing the total wages payable.

These excepted classes are: Agricultural labor, domestic service, services as officer or member of vessel's crew, family employment (except services by son or daughter over age of 21 years for father or mother) government employes, and employes of religious, charitable, and similar organizations, and services outside the United States.

In determining whether he is an "employer" under the federal law, a person would exclude all persons working for

him who are in the excepted classes.

For example, an independent oil jobber owns and operates a bulk plant, four service stations, and a tank truck. He has seven men working at one time or another during the week either at the bulk plant or the service stations. His 20-year old son drives the tank truck; his 18-year old son helps out at one of the stations. The jobber divides his time between the stations while his wife does the bookkeeping. Besides this, he has a servant at home and a farm outside of town where several more men are employed all the time.

This jobber would not be subject to the federal tax—because he has not "eight or more" persons working for him who are not in the excepted classes. His sons, wife, servant and employes on the farm are all excluded in the count and those remaining total only seven.

If his business warranted it, this jobber could also employ several men to bring his gasoline upriver by barge without incurring liability for the tax. The word "vessel" in the provision exempting "officers and members of the crew" from consideration in figuring the tax, includes "every description of watercraft or other contrivance, used as a means of transportation on water."

It should be emphasized, however, that if an employe in any of the excepted classes—such as domestic servant, farmhand, operator of a boat, etc.,—does even one hour's work at the jobber's filling station, in the example cited, during one day a week for 20 weeks (on a day when there were seven other non-excepted employes working) it would be sufficient to subject the jobber to tax on the total annual wages of the seven non-excepted employes plus the proportion of the excepted employe's wages which should be charged to the filling stations for his part-time work there.

Under the social security law, the term "wages" means all remuneration for employment, whether payable in money or something other than money; the name by which the remuneration is designated is not material. The "fair value," at the time of payment, of all items other than money must be determined and added to actual monetary compensation.

Included as "wages," according to the regulations, are: vacation allowances, sick pay and so-called dismissal wages; travelling expenses in excess of those actually incurred and accounted for by the employe; generally, premiums on life insurance paid by the employer where the employer is not the beneficiary; amounts deducted from the employe's wages; and payments by employer into employes' fund.

The Internal Revenue Bureau had intended to include tips received by employes from customers as "wages" but at the last minute struck it out of the regulations, it is understood.

Well in advance of Jan. 31, 1937, the bureau will have available forms on which returns are to be made (Form 940), it was said. Returns are to be made to the collector of internal revenue for the district in which the employer has his principal place of business.

Every person subject to the tax is required to keep records necessary to furnish information required in the return. However, since the return is not yet available, it is not known exactly what data will be required. But the regulations indicate generally what the bureau thinks essential. Permanent records (they must be retained for four years after the due date of tax, that is, 1936 data must be kept until Jan. 1, 1941, and so on) necessary to establish the following must be kept by every employer:

Total amount of remuneration payable to his employes in cash or in a medium other than cash, showing separately total payable to employes in excepted classes and total payable for all other services.

Amount of contributions paid by him into any state unemployment fund, with respect to services during the calendar year not excepted by the regulations, showing separately payments made and not deducted (or to be deducted) from remuneration of employes and payments deducted (or to be deducted) from remuneration of employes; and also contributions into the state fund with respect to services excepted from the federal law (farm hands, family employment, etc.).

The regulations state that it is not necessary to adopt any particular method of accounting or form of record, provided that such records are kept as will furnish the information required. Records are not required to show the number of individuals employed on any particular day, it was said. But they must show total remuneration actually paid and the number of individuals employed during each calendar month, or during each such lesser period as the employer may elect.

Any person employing individuals but who does not consider he is an "employer" subject to the federal tax should be prepared to establish by p r o p e r records (including, where necessary, the number of individuals employed each day) that he is not an "employer."

In setting up their systems of records, however, employers should bear in mind that state unemployment - compensation laws may require other and more detailed information than the federal regulations; also, that the federal old-age annuity tax, which will apply equally to employer and employe (although both taxes will be collected from the employer) goes into effect Jan. 1, 1937, and undoubtedly will require much more detailed data than the unemployment - compensation provisions with which the present regulations are con-

How to Get Regulations

Complete regulations governing the new payroll tax on all employers of eight or more persons may be obtained from the Superintendent of Documents, Washington, D. C.

Ask for "U. S. Treasury Department, Regulations 90 Relating to the Excise Tax on Employers under Title IX of the Social Security Act." The price is 10 cents which must be remitted in coin or money order. Stamps are not accepted by the government.

cerned. Regulations covering the old-age annuity plan will not be ready for some months yet.

Any employer who contemplates either discontinuance of his business by retirement or merger, consolidation or reorganization involving the transfer of assets, is required to give notice immediately of that fact to the Commissioner of Internal Revenue. Similar notice is required of the death or bankruptcy of the employer.

Holds New York Social Security Law Invalid

By Teletype

NEW YORK, March 16. — New York State's Unemployment-Insurance law was held unconstitutional today by Supreme Court Justice Pierce H. Russell. He refused, however, to grant an injunction asked by the Associated Industries of New York state, saying that he did not wish to stop the state's job insurance machinery from operating until the higher courts had passed on the law.

Attorneys for the state said they would appeal the case to the New York Court of Appeals. Another case involving the constitutionality of the New York law is expected to be heard by the Court of Appeals this week. The New York law is similar to the federal law, but the latter was not involved in Judge Russell's ruling.

In his opinion Justice Russell stated in part:

"It is my opinion that the compulsory contribution by an employer to be paid as an unemployment-insurance benefit to any employe of another is without validity under our system of government and constitutes unwarranted, unreasonable and arbitrary transfer of the property of one to another in violation of the due process clause of the constitution."

Will Not Distribute Stock

NEW YORK, March 14.—Wall Street has been rife with rumors the past week that Standard Oil Co. of New Jersey plans distribution to stockholders of its holdings in Imperial Oil Ltd. and Humble Oil & Refining Co. Such plans have been denied by officials of the company and so far the matter has not even been discussed, it was said at the Jersey offices here.

New Price Discrimination Bill Before Senate

WASHINGTON, March 16.—Senator Copeland, New York, introduced March 16 another bill (S-4275) to amend the Clayton Act to make it unlawful for any person engaged in commerce to offer or "knowingly" to induce or receive a discrimination in price or terms as between purchasers.

He also proposed an amendment to the Robinson anti-chain store bill (S-3154) permitting the payment of commissions brokerages, or other compensations to bona fide co-operatives for services actually rendered and also to customers purchasing under like terms and conditions.

The Copeland Bill specifies that its provisions shall not be interpreted as preventing differences the seller makes in good faith and which are justified by kind, variety, style, grade,, quantity, condition, or customer classification. Also exempted are price differences due to seller's cost of doing business, business need, or a customary sale upon a fluctuating price basis. The bill declares that prices due to difference in quality cannot make for unjust price discrimination which lessens competition or tends to create a monopoly.

Both the Copeland Bill and his amendment to the Robinson Bill were referred to the Senate Judiciary Committee.

Pipeline Bill Near Passage

BIRMINGHAM, Ala.—A bill giving the Pure Oil Co. and the Gulf Refining Co. the right of eminent domain in the building of a pipeline from the Port of Birmingham to Atlanta is well on its way to passage in the Alabama legislature now in special session. Governor Eugene Talmadge has offered the right of eminent domain through Georgia.

When the line is built gasoline for Atlantic and environs will come in through the port of Mobile, up the Warrior River to Port of Birmingham and then by pipeline to Atlanta. It is estimated that 20,000 tons of pipe will be required for the project.

P. E. Lakin

Lakin is Vice-President Of Shell Pet. Corp.

ST. LOUIS, March 13.—P. E. Lakin, general sales manager for Shell Petroleum Corp., has been made a vice-president of the corporation to succeed L. van Eeghen, resigned. Mr. Lakin continues as general sales manager also.

Mr. Lakin is a native of Tacoma, Wash. He entered the Shell organization in 1915 after his graduation from the University of California. He has been with Shell continuously since that time except for the war period when he served overseas as in the 96 Aero Squadron.

Before his transfer to St. Louis as general sales manager in 1933 Mr. Lakin was in charge of a Shell marketing subsidiary on the Pacific Coast.

130,000 New Oil Burners Installed Yearly, New England Jobbers Told

By T. W. Watson
N. P. N. Staff Writer

BOSTON, March 13 MERCHANDISING and taxation were the chief subjects of business discussion at the two-day convention of the Oil Mens' Association of New England here this week. In addition, an exhibit of oil equipment and accessories came in for plenty of attention. Attendance at the meeting was restricted somewhat by flood conditions through portions of New England, but more than 1400 attended the banquet March 13.

Chiseling is not needed to build up a fuel oil or oil burner business, Glenn Arnold, vice-president of the Petroleum Heat & Power Co., New York City told the oil men. Taking advantage of the tremendous market for oil burners and fuel oil and using good business methods to get a fair share of the increased business this industry is enjoying from year to year will mean a good profit for all companies involved, as well as better service to the customer, Mr. Arnold continued.

The present growth of the oil burner market is at the rate of 10,000 new industrial burners and 120,000 domestic automatic burners annually, Mr. Arnold said, which in 1940 should involve the consumption of 300,000,000 barrels of industrial fuel oil and 100,000,000 barrels of light fuel oil.

In 1905, there were 400 industrial installations in the country using about 1,000,000 barrels of oil, while by 1935 this had grown to 73,000 industrial burners and 1,169,000 automatic installations, using a total of 290,000,000 barrels of industrial and 58,450,000 barrels of domestic fuel oil, Mr. Arnold estimated.

The idea that additional profit can be made for a company by giving free burner service to promote the sale of fuel oil is nearly always incorrect, Mr. Arnold said. Estimates show that it costs about 0.5 cent a gallon for the service given to the average customer, while the general average net profit per gallon is around 1-cent, he stated. Thus if free service is given, the company would have to double its gallonage before it would realize the same net profit as it would without the free service, he continued.

Mr. Arnold pinch-hit for William C. McTarnahan, president of the same company, who had been scheduled to talk on "Co-Operation Between Burner Sales Companies and Oil Sales and Service Companies", but was too ill to attend the meeting.

TAXATION and regulation of motor transportation are the toll gates of today and their broad effect is to discourage and restrict free movement of trade within and between states and handicaps the free use of the highways, according to Baird H. Markham, director of the American Petroleum Industries Committee, who addressed the convention the second day.

In the average New England state a reasonable registration fee and a gasoline tax rate of two or three cents at the most would provide funds more than sufficient to meet highway needs, Mr. Markham said. Future highway work in most of New England should be largely of maintenance and improvement of main routes, plus the construction of low-cost secondary and farm-to-market roads, he stated, for which a reasonable tax rate would be sufficient.

He stressed the need for long-term programs of highway construction, improvement and maintenance based upon present and prospective needs, which would be worked out by state highway officials from information obtained through traffic surveys.

Commenting upon press reports that the presidents of four New England railroads have recently informed the governors of these states that the railroads could not contribute more substantially to the cost of government because they suffered from "under-regulated and under-taxed highway competition", Mr. Markham said that highway users paid the same types of taxes paid by the railroads, as well as paying more than $53,000,000 a year in gasoline taxes and registration fees in New England.

Keeping a close record of purchases and sales and a thorough check on stocks of merchandise handled are two of the ways to step up profits in 1936, G. W. Sully, National Cash Register Co., Dayton, Ohio told the oil men.

A close check on sales and purchases will often reveal that the company has been concentrating its selling on some line which brings in only a small profit, while neglecting another which would bring in much more, Mr. Sully said. Arrangement of stock and proper displays are other important factors in successful selling, he continued.

People are starting to buy quality again even though price still is a big factor, Mr. Sully said, and companies who handle a quality product and sell it properly will profit thereby. The most important things in selling are knowing the facts about the product you sell, what it is and what it does, particularly from the customers point of view. Often the merchant who blames his loss on some price cutting by competitors, would find that the chief reason for the loss lay in his own lack of merchandising and poor sales methods, Mr. Sully continued.

Francis P. Garland, Boston attorney, spoke on "Crime and Its Cost to the Industry".

S. D. Convention March 26, 27

MADISON, S. D., March 14.—The annual convention of the South Dakota Independent Oil Men's Ass'n. will be held March 26 and 27 at the Hotel Lincoln,

Watertown, S. D., according to F. H. Buehler, secretary.

The convention had been originally set for the second week of February, but postponement was necessary when severe storms blockaded roads.

PAB to Get New Lease On Life April 1

By Teletype

WASHINGTON, Mar. 17. — Although the Petroleum Administrative Board is due to pass out of existence April 1, its ghost will carry on as the Petroleum Conservation Division, a new agency set up in the Interior Department, it was learned today.

The new division will assist Secretary Ickes in administering the Connally "Hot" Oil Law. George W. Holland, chairman of the PAB, probably will be installed as director to serve as Ickes' contact agency with the Interstate Oil Compact Commission and other departments of the federal and state government having to do with oil and gas.

Besides Chairman Holland, only two members remain on the PAB—Dr. John W. Frey and E. B. Swanson. The staff of the board has been drastically curtailed in recent months.

The Petroleum Labor Policy Board likewise dies on April 1. However, Dr. John Lapp, sole remaining member, has been named assistant to Ickes on labor relations in his capacity as public works administrator.

Transfers Richfield Interest

LOS ANGELES, March 13.—Announcement that Cities Service had agreed to transfer its security holdings in the Richfield Oil Co. of California and Pan American Petroleum to the Rio Grande Oil Co., controlled by Consolidated, in exchange for half interest in the capital stock of Rio Grande Oil Co. is expected to change the aspect of the Richfield reorganization. It was indicated the deal was not contingent upon the successful completion of this reorganization, however, but is the outcome of long negotiations between Cities Service and Consolidated for control of the Richfield properties.

Bus-Truck Law Applied to Intrastate Shippers

WASHINGTON, March 16.—The Interstate Commerce Commission reached out this week to bring under provisions of the so-called bus-truck law common carrier trucks operating entirely within a state.

In a ruling issued March 13, the I.C.C. requires that such carriers file their tariffs with the commission if they accept business from other carriers which originated in another state. Schedules of all charges must be filed by March 23, to become effective April 1.

East Texas Building Nears Completion

TULSA, March 14.—The new 8-inch crude oil line being built for the East Texas Refining Co. from Rodessa to the Longview, Tex., refinery is expected to be placed in operation within the next week or 10 days. The line, 55 miles long, has one pump station in the Rodessa field, and another at the midway point.

The company's new high pressure absorption type natural gasoline plant, under construction in the Rodessa field, is expected to be in operation within seven days. The plant's capacity is given at 30,000 gallons of natural gasoline daily. The stripped gases will be used at the plant, in field operations and at the crude oil line pump stations.

The modernization and expansion program announced recently for the Longview refinery also is being rushed and now is expected to be completed by April 1.

Ask Views on Oil Code

LOUISVILLE, Ky., March 14.—Kentucky oil men have been urged by the Kentucky Petroleum Marketers Assn. to make known their attitudes on the proposed 12-state petroleum code which is to be submitted to the Federal Trade Commission.

If other states, including Kentucky, desire to be included the new code will be submitted to the FTC for the industry of the country, but if they do not it will be submitted only for the 12 states that took part in the original conference.

Directors of the Kentucky association are considering a meeting on this subject if action is desired by the industry on Kentucky being included in such a code.

U. S. Crude Stocks Rise 661,000 Barrels

WASHINGTON, March 16.—Reversing the downward trend of some weeks, crude oil stocks during the week ended March 7 increased 661,000 bbls., the U. S. Bureau of Mines reported today. Foreign oils were down 82,000 bbls. Stocks totaled 310,105,000 bbls. on March 7.

Grade of Crude	Feb. 29	Mar. 7	Change
	(Thousands of Barrels)		
Pennsylvania grade	3,972	4,049	+ 77
Other Appalachian	818	900	+ 82
Lima-N. E. Ind.-Mich.	1,088	1,112	+ 24
Ill.-S. W. Ind.	10,671	10,571	—100
N. La. and Ark.	9,196	9,401	+205
W. Tex. and S. E. N. Mex.	28,123	28,611	+488
East Texas	20,396	20,381	— 15
Other Mid-Continent	127,542	127,203	—339
Gulf Coast	25,652	25,829	+177
Rocky Mountains	26,591	26,570	— 21
California	35,739	35,854	+115
Foreign	3,256	3,174	— 82
Total reported weekly, including foreign	293,044	293,655	+611
Estimate for unreported stocks	16,400	16,450	+ 50
TOTAL	309,444	310,105	+661

Socony-Vacuum Earnings Slightly Lower

NEW YORK, March 16—Socony-Vacuum Oil Co. earned $22,500,000 in 1935, according to an estimate made by John A. Brown, president, and mailed to stockholders today. This figure is arrived at after deducting all charges, including a nonrecurring charge of $2,900,000 representing premiums paid and unamortized discount on bonds retired during the year. Reported net earnings for 1934 were $24,121,297.

Funded and long term debt on Dec. 31, 1935 was $77,000,000, a reduction of $8,000,000 during the year. Cash and marketable securities on Dec. 31, 1935 are estimated at around $70,000,000, an increase of $11,400,000 during the year.

Good Lube Yield but Poor Gasoline Obtainable from Rodessa Crude

TULSA

GASOLINE from Rodessa crude does not offer any serious menace to the motor fuel market structure if conclusions are based on the octane number of the straight-run gasoline refined on a laboratory scale. With a 27.5 per cent yield of 38 octane number straight-run gasoline, the present production of the field of 40,000 barrels of crude per day will yield 11,000 barrels of gasoline.

In the hands of bootleggers and "hot" gasoline peddlers such as plagued East Texas for a year or more, this amount of poor third grade gasoline might upset the local market seriously. That no great amount of this "hammer" gasoline may be expected to reach a market by that route is reasonably certain, unless the legitimate refiners refuse to accept the crude, and thus force the building of a group of scrap-iron so-called refineries, as occured in East Texas.

One fair-sized topping-cracking plant is already planned for that field and it is possible that one or more additional ones will be built. Some of the smaller operating plants in East Texas may be moved to the Rodessa area; no one can say, as yet.

Rodessa crude is receiving considerable attention from Mid-Continent technologists as a source of extraordinarily good lubricating oil, according to studies of it which have been made recently on a laboratory scale. A total of 20 to 25 per cent of lubricating oil, ranging from 100 neutral to an SAE 50 motor oil, may be obtained from this crude.

With a gravity of approximately 42.0 A. P. I., a dark green color, sulfur of 0.25 per cent, Rodessa crude yields 27.5 per cent of an exceptionally low octane number straight-run gasoline, the rating being 38 to 40 for 400 endpoint motor fuel. The kerosine and gas oil fractions are comparatively large, with 17.5 per cent kerosine and 25 per cent of gas oil. The kerosine requires little if any treatment, having good color and odor, is non-corrosive and sweet to doctor test.

The gas oil is highly paraffinic as would be expected in such a crude, and in fact is probably too high in pour point (45 F.), to be satisfactory for furnace oil or diesel fuel purposes. It is probably a good cracking stock. Viscosity breaking treatment would also make it satisfactory for diesel fuels, but would also increase its cost. With a 40,000 barrel per day production at present, and the limits of the field still not entirely defined, a 25 per cent yield of diesel fuel would practically supply the national market for automotive, locomotive, and other semi-high-speed diesel equipment. The remoteness of the field, and of the plants in which it probably will be refined, combined with the high pour point preclude any real likelihood of this source of diesel fuel becoming important in the near future.

By distilling the crude to three lubricating fractions, a finished 100 neutral oil is obtained which is 10 per cent of the crude. A 10 per cent 200 neutral fraction is obtained, which yields 12.5 per cent of wax by acetone-benzol treatment, and a 2.5 per cent loss by acid and clay treatments of five

Table I

Laboratory Analysis of Rodessa Crude

Short Residuum

ANALYSIS

Gravity	41.8
Flash	Atmos.
Viscosity, S. U. @ 50 F.	70
Viscosity, S. U. @ 100 F.	39.5
Pour Point	0° F.
B. S. & W.	0.2%
Sulphur Content	0.25%
Color	Dk. Grn.

YIELDS

Gasoline	27.50%
Kerosine	17.50
Gas Oil	25.00
Lube (All cuts)	26.25
Residue	2.50
Loss	1.25
Total	100.00

ANALYSES OF PRODUCTS

	Gasoline	Kerosine	Gas Oil	
Gravity	59.3	47.8	39.1	
Viscosity, S. U. at 100 F.	.....	.....	60	
Flash	.....	165	285	
Pour Test	.....	.....	45° F.	
Initial B. P.	122	364	.....	
10% at	188	390	.....	
50% at	280	436	.....	
90% at	356	502	.....	
End Point	400	546	.....	
Octane Number	38	.....	.....	....

	100 Vis. Neutral	SAE 10	SAE 50
Gravity, A.P.I. at 60 F.	33.1	30.0	27.4
Viscosity at 100 F.	100	228	.....
Viscosity at 210 F.	.....	48	91
Color	2	4	7
Flash	340	420	510
Fire	395	490	620
Pour Point	90° F.	105° F.	125° F.
Yield/Crude	10%	10%	6.25%

Table II

Laboratory Analysis of Rodessa Crude

Long Residuum

YIELDS

Gasoline	27.5%
Kerosine	17.5
Gas Oil	25.0
Lube Fractions	15.0
Residual Bottoms	13.75
Loss	1.25
Total	100.00

ANALYSES OF PRODUCTS

	Gasoline	Kerosine	Gas Oil
Gravity, A. P. I. @ 60 F.	59.8	47.8	39.1
Flash	.....	165° F.	285° F.
Color	30	30	Straw
Pour Test	....	....	45° F.
I. B. P.	120° F.	362° F.	.....
10% @	184	388	.....
20% @	211	402	.....
50% @	264	434	.....
90% @	355	502	.....
End Point	400	546	.....
Recovery	98%	99%	.....
Octane No.	38	....	.....

	100 Vis. Neutral	200 Vis. Neutral	Residual
Gravity	33.1	30.3	25.7
Viscosity @ 100 F. S. U.	100	220	.....
Viscosity @ 210 F. S. U.	.....	43	163
Color, NPA	2	4	.....
Flash	340° F.	400° F.	545
Fire	395	480	620
Pour Point	90° F.	100° F.	115° F.
Yield/Crude	10.0%	5.0%	13.75%

pounds each per barrel, giving 8.5 per cent of finished oil. This finished oil has the remarkably high flash point of 435 F., and a viscosity index of 95, indicating a product of highly paraffinic composition, more closely comparable to Pennsylvania cils than probably any other Mid-Continent crude.

The heavy oil fraction after a four per cent loss on acid-and-clay treatment and a 15 per cent wax loss, yields slightly less than five per cent of finished oil of SAE 50 grade. The flash of this oil is 515 F., with a carbon residue of 1.22 per cent and viscosity index of 94. However, the carbon residue of the 200 neutral is only 0.1 per cent. Both oils reported were dewaxed to 25 pour point. The pour point of the three undewaxed lubricating fractions was 90, 105 and 125 F. respectively.

The accompanying tables show the yields and properties of the various products as obtained by separation into the fractions indicated. In both studies 4000 milliliters was distilled to give the yields shown, and the products were refined as indicated. The gas oil and lubricating fractions were distilled off at 16 millimeters absolute pressure, the lighter cuts at atmospheric pressure.

Table 1 shows the results obtained when distilling to a very low residue of 2.5 per cent. Little bright stock material exists in the crude, the heaviest distillable material going into the fraction which is refined to the heavy lubricating oil. Table 2 is merely a different separation of cuts, and was obtained from the same crude sample, it is understood.

Installs Clay Treaters

Two clay treating installations are reported by The Gray Processes Corp. to have been put into service recently. McColl-Frontenac Oil Co., Ltd., has arranged for a substantial increase. Part represents increased throughput of existing equipment, while the rest was arranged in order to take care of production expected as a result of proposed additions of cracking equipment.

Quaker State Oil Refining Corp. is said to have resumed clay treating of its house brand gasoline after extensive tests.

Bill to Increase Tanker Canal Tolls Dies

WASHINGTON, March 17.—The Gore Bill (S 2288) providing for measurement of vessels using the Panama Canal and fixing of minimum tolls is apparently dead for this session. A substitute bill, passed March 12 by the Senate and sent to the House, simply authorizes the President to appoint a "neutral" committee to investigate the rules for measurement of vessels using the canal and report back to Congress by Jan. 1, 1937.

Pending on the House calendar now is the Panama Canal toll bill (HR 5292), by Congressman Lea, of California, which was favorably reported by the House Interstate Commerce Committee.

The Gore Bill, as reported by the Senate committee (but not as passed by the Senate) contained a provision that tolls on laden tankers using the Canal should be 10 cents per net registered ton higher than tolls on other laden vessels of commerce.

Sums Up Calif. Refining Developments in 1935

California had 76 refineries at the beginning of 1936 with a total daily crude throughput capacity of 859,110 barrels, according to Bureau of Mines figures collected by E. T. Knudsen. The capacity of 60 plants which were operating was 799,160 barrels daily and they were operating at 67 per cent of their capacity at the first of the year.

While the number of operating plants was three less than a year ago, the capacity represents an increase of nearly 50,000 barrels. Several small plants were constructed during the year but 15 of the smaller plants were shut down as compared to 10 at the beginning of 1935.

Considerable modernization and expansion during the year was indicated by an increase in the number of tube and pipe stills from 140 to 147 and an increase in capacity from 544,285 to 624,260 barrels daily. Two additional units of 22,000 barrels daily capacity were under construction.

There were three more cracking units in California bringing the total to 87 units of 326,100 barrels daily cracking capacity. Operating units increased from 66 to 67 but the capacity decreased 4150 barrels to 254,700 barrels daily.

The number of natural gasoline plants in California changed little during 1935, the 89 operating being two less than at the beginning of the year and the 19 shut down being 5 less. The daily capacity of the operating plants was 2,094,950,000 cubic feet and 3,096,550 gallons, as compared to 2,137,455,000 cubic feet and 3,178,780 gallons at the beginning of 1935.

Tables accompanying this report give alphabetical lists of the refineries and cracking plants, their location capacities, status and type, and natural gasoline plants with similar information. There are also lists of natural gasoline plants by fields, and lists of operators.

Plan New Pipeline

LOS ANGELES, March 12.—Preliminary surveys are reported to have been made for a new pipeline connecting Kettleman Hills North Dome with Estero Bay. The project is understood to be sponsored by The Texas Co. and Milham Exploration Co. jointly.

Kerosine Prices Restored

CHICAGO, March 16.—Reflecting, to a great extent, the betterment which has recently taken place in wholesale kerosine markets, on March 16 so-called normal price levels were restored at most points in Standard Oil Co. of Indiana territory. Similar advances were made in No. 1 furnace oil.

Advances ranged up to 3 cents per gallon at some points. No changes were made in Michigan or Kansas. Some smaller cities which were below the generally accepted normal also remained unchanged.

Co-operation of Louisiana with Compact States Pledged by Governor Noe

By Lawrence E. Smith
N. P. N. Staff Writer

OKLAHOMA CITY, March 14

A TELEPHONE message from Gov. James A. Noe, of Louisiana, to Gov. E. W. Marland, Oklahoma, brought applause from members of the Interstate Compact Commission and the hundred visitors at the fourth meeting of the commission in Oklahoma City March 13.

The Louisiana governor regretted he could not attend and said he was busy at that time attending to enforcement in the Rodessa field. He asserted there would be no "hot" oil from that field and that he intended to cooperate with the oil industry in maintaining the price. The latter statement was a little out of line with the usual discussions at compact meetings. Price, Gov. Allred of Texas has repeatedly said, is the "forbidden thing" on the agenda of the commission.

Five of the six compacting states were represented, Oklahoma, Texas, Kansas, New Mexico and Illinois. Colorado was the absentee. Business of the meeting centered upon reports of committees previously appointed to study several phases of the states' regulation of oil and gas fields. Chief of these reports was that of the conservation commission, headed by Homer Hoch, who presented the findings of a sub-committee of technical men. Mr. Hoch was last week re-appointed by Gov. Alfred M. Landon as chairman of the Kansas Corporation Commission. He is the official representative of Kansas on the compact commission.

The report, surveying the present state conservation laws, was drawn by a sub-committee consisting of Marvin Lee, Wichita, Kansas, chairman; Dr. E. H. Wells, state geologist of New Mexico and C. C. Brown, former assistant conservation officer of Oklahoma, now a member of the Oklahoma Tax Commission. Some weeks were devoted by these men to a study and compilation of a summary of oil and gas laws of all producing states. The summary, under numerous sub-headings, is being checked by conservation authorities of the states and later will be published.

The report was temperate in its recommendations for legislation and was pronounced by Col. E. O. Thompson, chairman of the Texas Railroad Commission, as the outstanding achievement of the oil compact commission to date.

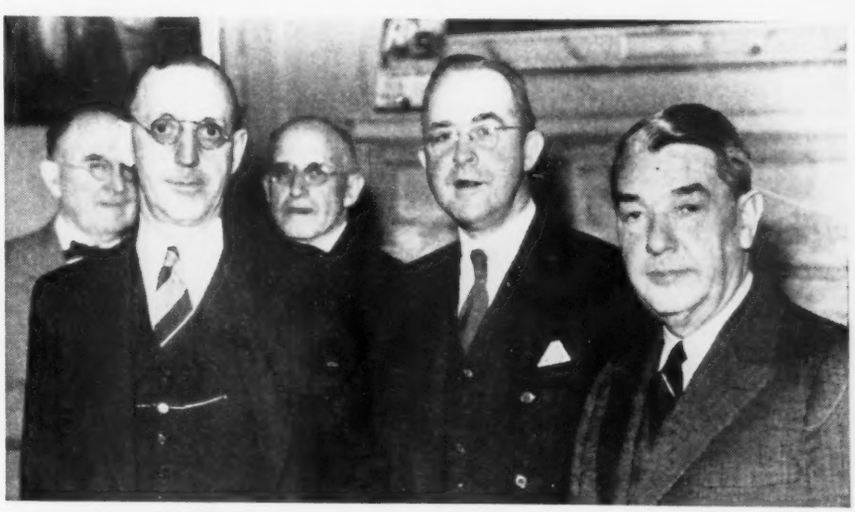
Chairman Marland directed thought to extension of the compact agreement, which expires by its own terms Sept. 1, 1937. He said that it is "not as complete an instrument as that which the Federal Oil Conservation Board proposed in 1932, but it is the best engine we have available at the moment for use in the cause of oil conservation."

"It ought to be apparent to everyone," said Gov. Marland, "that this kind of a voluntary arrangement among half a dozen or more sovereign states, with nothing compulsory about it, is going to do just as much or just as little for the cause of conservation as the enlightened public opinion in those states and in the petroleum industry as a whole demands.

"Three things can happen to the Interstate Compact:

"First, now that the fear of federal control has subsided, the industry may lose interest in the compact and let it fall to pieces. If that happens, it will be a tragedy for the industry itself, a tragedy for the principles of self-government, and a tragedy to the consumers who must depend on these oil producing states for a long-continued supply of oil at reasonable prices. It is not going happen if the governors and other state officers who have earnestly tried to work this problem out are properly supported by the electorate.

"Second, the compact system can take a strong root, receive the vigorous support of the industry and of enlightened conservationists, and do many of the things for protection of our irreplaceable reserves that the advocates of federal control have insisted were their own objectives, and yet accomplish those purposes in a constitutional way, without infringing local powers of self-government of our people. If the compact is to succeed in that way, the



In the foreground, left to right, are Homer Hoch, chairman of the Kansas Corporation Commission and representative on the interstate oil compact commission; Col. Ernest O. Thompson, chairman of the Texas Railroad Commission, representing Texas; and Gov. E. W. Marland, Oklahoma, chairman of the commission

Two unofficial observers, William R. Boyd, American Petroleum Institute, and J. R. Pemberton, California oil umpire, at the compact meeting in Oklahoma City

states have got to be kept actively interested in it.

"Third, the compact may be overshadowed by an unexpected resurgence of the demand for federal regulation. The public has been indifferent to conservation of oil and gas because the price of gasoline has never reached a resistance level. But if the compact fails, if our petroleum reserves are selfishly used, and if the pocket nerve of the consuming public is suddenly pinched, the industry may encounter demands for regulation of a character that will make preceding attempts seem mild.

"The movement for greater federal control of the oil business has not run its course. A variety of activities have been suggested. Those who think that the federal government's power to regulate oil production under the war powers cannot be effectively exercised in peace time may overlook the possibility that future neutrality legislation might form the basis for regulations carrying the federal government's supervision of the oil business deeper than it has yet gone. There is going to be stronger agitation for federal regulation of pipelines, particularly of gas lines.

"When gasoline leaves the refinery, the petroleum industry has received as its reward for finding the oil, bringing it to the surface, transporting it to the refinery and processing it, about the same amount of money per gallon as the state and federal governments thereafter take in gasoline taxes.

"It has been suggested that, if there is going to be an involuntary partnership of this sort, the three partners ought to protect each other's interests. The federal government has a legitimate function in studying the demand for petroleum and its products. There is a feeling that the Bureau of Mines has functioned well and that its work ought to be strengthened. In the control of imports and exports, it is conceded that the federal government is capable of functioning where the states and the industry are not. The method of adjusting our imports and protecting American investments in foreign fields is not yet entirely satisfactory, and little has been attempted toward governmental agreements for protection of our export trade.

"There is wide recognition of the necessity for federal control of interstate shipments of "hot" oil on a permanent basis. Whether one believes that federal activities ought to expand along any of these many lines or not, it is a mistake to think that the end of the federal petroleum code was the end of federal interest in the oil business or in the oil reserves on which our national routine is dependent."

In the expression of his views, Gov. Marland gave credit to Northcutt Ely, Washington attorney, who spoke along the same lines to the petroleum division of the American Institute of Mining & Metallurgical Engineers in February.

Accredited observers attending this oil compact meeting brought hope that the compact will be enlarged. V. E. Bolyard, oil producer, Indianapolis, said a conference had already been arranged between state officials to hear his report when he returns. He will recommend that Indiana enter the compact as quickly as possible, he said. Ohio's representative, Wendell Stephens, of Findlay, asserted that he was favorably impressed with the work the compact commission is doing and will so report to his governor. Neither of these states had previously sent delegates.

Wilfred O'Leary, oil operator, represented Wyoming and said he believed his state would benefit by entering the compact. J. R. Pemberton, California, spoke briefly on conditions in his state. He said voluntary stabilization was succeeding in California and that, while he could not speak officially, he was certain that fully 85 per cent of the oil producers of California wanted to keep in step with the compact commission all the way.

Important recognition of the commission's work was reported by Homer Hoch, Kansas. He said he had received a letter from the chairman of the mineral resources committee, of the American Bar Association, who said he was recommending that his committee abandon its independent studies of conservation for this year and tender its services to the compact commission.

The committee on co-ordination, headed by Col Thompson, Texas, has completed its survey of prorated production in the several states, mainly a comparison of percentages of allowed production, and is awaiting a checking of its figures by the conservation authorities of the states. Dr. E. Wells, New Mexico, reported for the committee on consumption that the proposed survey by the Bureau of Mines of oil in storage should be supported, as it would supply guidance to setting allowables in prorated fields. Appropriation for the work is included in the Interior Department bill now before Congress.

The appropriations, $15,500 to finance the monthly surveys of demand which the Bureau

makes regularly and $39,000 for making the quantitative and qualititative report on crude oil stocks, are considered certain of passage, reported Tom Anglin, Oklahoma's alternate representative on the compact commission, and W. J. Holloway, legal adviser to the Oklahoma branch of the compact. Both have been in Washington recently urging these appropriations.

William Bell, Illinois, reported that his committee on imports and exports had not completed its work.

Michigan, a non-compacting state, but faithful in attendance at nearly all the meetings, was represented by Henry G. Hunt, secretary of the Oil & Gas Association of Michigan.

William R. Boyd, executive vice-president of the American Petroleum Institute, and Charles F. Roeser, president of the Independent Petroleum Association of America, renewed pledges of co-operation of their associations with the compact commission.

The meeting closed with limpid, cadenced oratory from Texans Roeser, Jack Blalock and Col. Thompson, inviting everybody to visit the Centennial expositions and ceremonies being held in that state. The compact commission agreed to hold its next meeting in Dallas, July 31.

Text of Conservation Sub-Committee Report To Interstate Oil Compact Commission

Following is the complete text of the report on conservation submitted to the Interstate Compact Commission by its sub-committee on conservation at its meeting March 13 in Oklahoma City.

Need of Conservation Legislation

The conservation of oil and gas is a vital matter of civilization because there are few, if any, people in this country whose living does not in some manner demand goods made with the aid of, or transported by petroleum products. The production of sufficient petroleum for the needs of our states and nation, for the longest possible time, at a reasonable price, is of importance to all the people.

True conservation of petroleum resources means the efficient extraction and utilization of these resources.

Conservation legislation is needed in most, if not all, of the oil producing states. Legislative committees should carefully study the results of previously enacted and proposed laws in other states and benefit from the trial and error of attempted or existing legislative action. Mistakes of the past 75 years should be considered and improvement made wherever possible.

Oil and gas fields are not restricted by state boundaries, but conservation has been restricted and hampered by failure to have more uniform state laws and regulations by regulatory bodies.

Legislatures should authorize their state regulatory agency to co-operate with similar agencies of adjoining states for conservation purposes in all fields crossing state lines.

Effects of Public Opinion

Legislation has been and will be affected by individual and group selfishness, as well as by civic pride, intelligent study and patriotic impulses. It should be both the duty and privilege of those in the industry to ascertain and present facts to state legislative bodies; failing to do this the industry should not criticise anyone but itself.

Conservation of Reservoir Energy

Conservation includes the conservation of reservoir energy, in a manner that will utilize the reservoir energy to most completely produce the petroleum or gas contained without unnecessary surface or underground waste. By properly conserving the reservoir energy, encroachment of water in fields which have a water drive will be retarded and utilized; larger amounts of crude petroleum will be recovered and lifting costs reduced. Conservation of reservoir energy is a proper subject for legislative action.

Well Spacing

Proper well spacing should serve to prevent physical waste; to conserve reservoir energy; to reduce development and operating expense and to increase ultimate recovery of oil and gas.

Spacing rules should be based on engineering studies of the character and condition of the reservoir, the cost of drilling and other pertinent factors. On account of competitive land and lease ownership, little progress has been made by voluntary or legislative procedure.

Well spacing is a matter that should not be rigidly fixed by legislative enactment, but authorization should be given to proper state agencies, to adopt and enforce well spacing rules, for the prevention of physical waste, to meet local conditions.

Drilling Control

No legislation should be enacted to control or restrict exploratory or "wildcat" drilling.

Drilling in probable extensions of known fields should be subject to any laws and regulations pertaining to such areas.

Drilling Regulations

The drilling of wells requires the observance of certain laws, rules and regulations if conservation is to be effected.

Legislation relative to drilling should provide the general features for wise conservation and the detailed drilling rules and regulations in the respective fields should be formulated by the regulatory agencies.

Unit Operation

The operation of a pool as a unit under one management has economic advantages. It results in minimum development and production costs. Maximum conservation of oil, gas and reservoir energy are possible, as well as large ultimate recovery.

Unit operation also has its disadvantages. If incompletely developed, the determination of the boundaries of the pool is impossible. An appraisal of the producing value of the various holdings at the time of unitization is difficult or impossible. It is impracticable to radically alter or revoke such a plan when once put into operation.

Unit operation should be permitted with the approval and under supervision of the existing regulatory agency when all the persons in interest mutually agree upon the plan and period of operation.

Proration

Proration or regulation of production of oil and gas is now considered necessary to prevent physical waste and maintain production within reasonable market demand. Proration is legalized in several of the oil producing states. The method of proration in many fields is in accordance with the recommendations of the producers as well as in keeping with the laws.

Ratable Taking

The conservation laws of several states provide for ratable taking, both as between wells within each common source of supply and as between different common sources of supply. Ratable taking, as applied to wells within a pool, is necessary for the protection of the property rights of the various producers, landowners and royalty interests.

In the enactment of state conservation laws, consideration should be

given to the fact that no two pools or common sources of supply are entirely comparable as to sand conditions, reservoir pressure and other operating factors.

Ratable taking for prevention of physical waste should be clearly and legally defined and the commissions or regulatory bodies should not be required to allocate to all pools and wells on the same plan.

Determination of Allowable

Methods of determining individual well allowables vary widely. The factors used include open flow potentials, tubing potentials, bottom hole pressures and acreage. Two or more of these factors are utilized in many fields.

Because of the many complications involved in determining per-well allowables the only recommendations made at this time are that legislatures should not attempt to be too specific in laws pertaining to well allocations and that a uniform method for all the wells within a state may result in inequities and interfere with best conservation practice.

Repressuring

Because of the ineffective production practices, due to lack of engineering knowledge as to efficient operation and production of oil fields, especially in the older fields, much of the oil originally in the producing formations is not recoverable without applying some artificial method for replacing depleted reservoir energy.

All states should have legislation permitting the state regulatory agency charged with the conservation of petroleum, to provide, with proper safeguards, for repressuring with air, gas, water or other liquids.

Progress Toward Stabilization Reported in California

LOS ANGELES, March 13—THE outlook for stabilization in California now is considered the most favorable that has existed for the past nine or ten months.

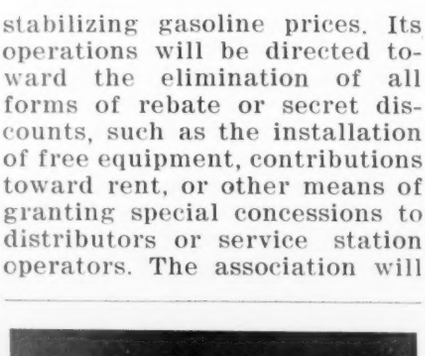
Of the favorable features of the situation, the most important is the probability that secondary or affiliated companies are to be forced to adhere to the marketing policies of their respective parent companies. In the past some major companies have claimed that their relationship to the secondary company was not direct enough to warrant price control, or that existing sales contracts stood in the way. These obstacles now are understood to have been overcome and all danger of future breaks in the market structure from that source is to be eliminated.

Similar promises that the operations of subsidiary companies would be brought under control have been made during former periods of crisis but, for one reason or another, they have broken down at the critical moment.

Through the support it will give to ethical trade practices, the new California Association of Independent Refiners is expected to assist materially in stabilizing gasoline prices. Its operations will be directed toward the elimination of all forms of rebate or secret discounts, such as the installation of free equipment, contributions toward rent, or other means of granting special concessions to distributors or service station operators. The association will also attempt to induce members to comply with the terms of the fair trade practices code formulated by the Federal Trade Commission in 1931 and recently revived. In particular, it will require each member to see that its posted prices are maintained by all distributors and retailers.

Membership in the association is limited to independent refiners, and subsidiaries or affiliates of major companies are not accepted. This restriction has barred Gilmore Oil Co., Rocket Distributing Co., Seaside Oil Co. and Signal Oil and Gas Co. On March 13, the board of directors authorized the admission of Sunset Oil Co., which had previously been considered ineligible because of its connection with Associated Oil Co.

No apparent progress was made during the week toward the absorption of the surplus gasoline that overhangs the market. Many marketers were of the opinion that this surplus is all that stands in the way of a substantial gasoline price advance, and they believed that some solution of the problem would be found within a week.



J. R. McWilliams

Heads S. O. Louisiana Production Dept.

TULSA, March 14.—J. R. McWilliams, Tulsa, has been made manager of production for the Standard Oil Co. of Louisiana, and has assumed his new duties at Shreveport. He succeeds W. L. Stratton, who resigned in February.

Mr. McWilliams, widely known among production men and engineers in the Mid-Continent, has been in charge of proration matters for the Carter Oil Co. for the past two years. He is a graduate of the University of Michigan, class of 1919. In 1925 he joined the Skelly Oil Co. as petroleum engineer. His association with the Carter, subsidiary of the Standard Oil Co. of New Jersey, as is the Standard of Louisiana, began in 1933.

Active in petroleum engineering organizations, including the American Institute of Mining & Metallurgical Engineers and the production division of the American Petroleum Institute. Mr. McWilliams has made important contributions to the technology of production.

Build up 1936 Gasoline Sales By Promoting Motor Travel

By WARREN C. PLATT
Editor

THE oil industry should give more energetic support to those things which create gasoline consumption, instead of accepting the gasoline demand as created by others, or the desires alone of the car owner.

The oil industry has helped much toward creating touring gasoline consumption by the free distribution of maps, making gasoline easily available, providing clean toilet facilities and, of course collecting the gasoline taxes with which the roads have been built. But the industry, it would appear, has rested too much on these activities and has not thought up and supported ways of causing car owners to want to go to still more places with the aid of gasoline, to drive more miles per day, more miles per week and more miles per year.

Probably never again will the industry have the great increases in gasoline consumption it had in the early development years of the automobile. It is, therefore, only sound business for the oil industry to increase its efforts to sell more gasoline per car owner, to show the car owner how he can use more of its products with value and profit and pleasure to himself and family. Against this sales policy of the industry and against the industry's financial interest we have the railroads doing their best to increase traffic on the rails and if that increase happens to come from automobile owners—as it must—the railroads are not going to weep for the oil industry. In fact the roads are about to adopt, on the order of the Interstate Commerce Commission, a big reduction in railroad fares to 2 cents a mile to try to get more people to ride the trains. Also we have the steamship lines, ocean, lake and river, seeking for business against the business interest of the gasoline distributors. Then we have resort hotels the country over trying to get tourists to "light" and stay awhile instead of being constantly on the move.

However, the interest of the oil industry does not lie so much in fighting these competitive factors as in joining with them to get more people to move around the country more. Obviously, in any such increase in movement, the oil industry will profit, undoubtedly in greater percentage than the railroads and steamship companies. The few days of extra rest that the resort hotels may prevail upon the wearied traveler to spend in their hospitable walls will not amount to much in gasoline gallonage lost, as the refreshed traveler should only go the further by reason of the breathing spell.

The real problem of the oil industry is no longer so much in how to produce, refine and sell petroleum products as how to get more of them efficiently consumed. And let it be plainly understood that, in all we are saying, we are only urging intelligent, efficient and worthwhile use of those products — no use that by any stretch of the imagination can be called waste. The industry's problem is very much like that of the resort hotels — and the city hotels as well — which is not how to run a hotel, how to buy food and hire help and wash the dishes and so on but how to get enough people to come to keep the place full and operating at efficient capacity. Smart Henry L. Doherty — also an oil man — who owns some hotels in Florida, has turned their operation over to a man who knows how to get people to come to them, who is a publicity and sales manager but does not know any more about the internal operations of a hotel than you and I.

So one of the oil industry's big problems of today and the future is not one of oil industry operating mechanics but one of increasing consumption of its products and in pursuing such policies as will protect the industry against the competition of other attractions for the money and time and travel of its customers.

THE oil industry to date has not done what could have been done in support of such things as getting people to roam around the country and even around their own neighborhoods more. We admit it has been talked of for many years but has the problem been attacked as intelligently and vigorously as it should? For example, in the great Chicago Century of Progress, what did the oil industry as such do toward drumming up business for it, or getting those who went there to drive rather than take trains? Relatively little, even though individual oil companies made big investments in fine exhibits there.

This year there are three great expositions the oil industry should support in every way possible, the Great Lakes Exposition in Cleveland and the other the Centennial of Texas, with its chief activity at Dallas and the second year of the San Diego, Calif., exposition. These three

expositions will draw millions of people. They should all, from an oil industry's standpoint, drive to these expositions and consume gasoline and oil. These expositions will have the capacity undoubtedly to handle a few million more people than will come to them. It should be the oil industry's aim, as well as its avowed task, to get as many of those millions of extra people as possible to climb into their automobiles and drive to the expositions.

This the industry can do by seeing that every employe of every oil company — from the well to the consumer — knows all about these expositions, what is interesting and valuable about them and how every person will benefit by attending. All oil company employes should be so well sold on them that each will want to go and will try, if possible, to go and take his or her family. Thus primed, oil company employes will drum up more business for these big shows. Through the industry's advertising and general sales effort more sales push can be put behind these expositions. For both of these expositions special oil industry promotion committees have been formed to correlate the interested companies' efforts. In both shows oil companies are placing a big investment for exhibits and in underwriting part of the expenses.

In making this recommendation for greater and more intelligent co-operation of the industry in support of these two expositions and all other attractions to the motorists, we decidedly are not urging the industry to rush headlong into a mess of new committees, co-operative advertising movements and so on. The industry should travel slowly in that direction. Far better that the industry be a bit slow in this regard than to get behind some foolish and expensive ideas.

In connection with the Cleveland Exposition the suggestion was made that the oil companies directly interested co-operate on a big billboard campaign. The writer demurred, urging that, even at the loss of a few million gallons of business, the companies go slow and first exhaust the possibilities of reaching the public through their own service stations and retail outlets. Far better for the industry to start in a small and inexpensive way and build from the ground up than start on some "high-faluting" scheme and blow up.

The most sensible and conservative plan is for the oil companies, big and little, who are interested in a local event — even a county fair or a show or a big base ball game — to get together around that one point of interest and see what can actually be done to develop business, than to have a fancy and probably expensive program handed them from above which will not be understood and generally will not fit the particular situation. The chief thing always is for the heads of the companies involved to be sold on the merits of the idea and then to get their employes equally well sold, then to provide sale material at the stations together with directions how to get to the particular event by driving.

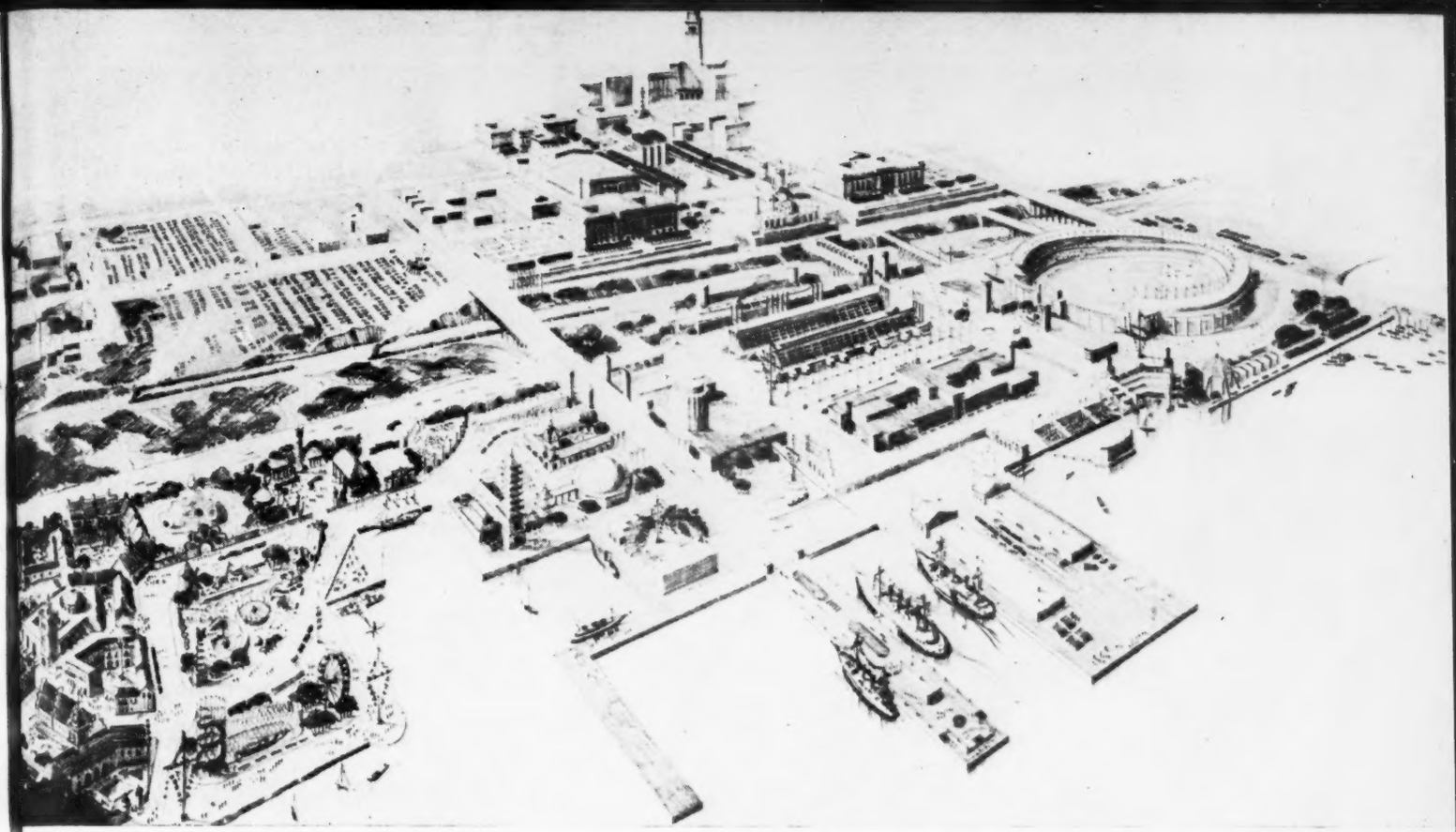
We do not want to kill any business for our brothers in the publishing business, the magazines, newspapers, billboards and advertising agencies, but we do urge on our readers to see what their own present facilities can do and to exhaust those facilities before turning to spending money in fields that neither they nor many other people know just how to cultivate. Let the invasion by the oil industry of the field of increased consumption promotion be gradual.

The industry also should turn a deaf ear to pleas for support of such schemes as would be financed by the event itself or by other beneficiaries of it. Oil companies have the reputation of having barrels of money and resort owners, exposition promoters and all will try to foist on the industry jobs that they should do themselves. Also the industry will be besieged to back schemes and events that will have only a remote effect on gasoline consumption. The industry should not hesitate to be hard boiled on all these because these promoters are decidedly hard boiled and many of them none too scrupulous, as well.

THE industry does not know yet just what can be done in selling things to the public through the brief daily contacts with it at its filling stations and other retail outlets. The industry must be careful in whatever it undertakes at this point not to irritate its customers nor waste their time. The industry must also exercise the keenest judgment as to what it gets behind at its stations. Various groups seeking to benefit from the publicity will come forth with all kinds of arguments why their event, or movement or social activity should be featured at oil company outlets. We will have churches and lodges, and gasoline buying groups of all kinds importuning the companies for sales effort in their behalf at the stations, whether there was any gasoline to be sold on these occasions or not. There is danger in this new ground we will tread but not so much if the companies are intelligent and courageous in their decisions. Probably out of all the pressure that will undoubtedly come from the many groups will be some kind of a central industry committee which will pass on the requests and to whose recommendations all wise companies will listen. Merchants in the larger cities have such committees to pass on funny looking advertising and "charity" requests for them and they work well.

But whatever the industry's difficulties in venturing into general gasoline consumption promotion, it is a job that the industry should undertake and push vigorously and definitely and these big expositions this summer are good subjects for the industry to try its skill on. Then next year we will know more about what not to do at least.

So with this as an introduction we give you the story of the Cleveland Great Lakes Exposition, not because it is at Cleveland, but because it represents a means for the oil companies in Ohio and adjoining states and elsewhere to increase their gasoline business. At an early date we will present the same kind of a story on the great Texas Centennial, and other important events as they come along.



Stretching for a mile along Cleveland's lake shore, the Great Lakes Exposition will cover 125 acres. The Exposition will run for 100 days, from June 27 to October 4

Great Lakes Exposition to Attract 4,000,000 Visitors to Cleveland

THROUGHOUT the entire summer from June 27 to October 4, hundreds of thousands of visitors will converge upon Cleveland to attend the Great Lakes Exposition.

From Minnesota, Wisconsin, Illinois, Indiana, Kentucky, West Virginia, Pennsylvania, New York, and from all over Ohio, it is estimated that over 4,000,000 will visit this exposition, which celebrates the centennial of Cleveland's incorporation as a city.

Situated along Cleveland's lake front, the Great Lakes Exposition will be a mile in length and cover 125 acres, with the main entrance conveniently located just two blocks from the heart of the downtown section.

Throughout the entire exposition instructive and educatfonal exhibits will dramatize the industrial, commercial, cultural and civic progress of the Great Lakes region.

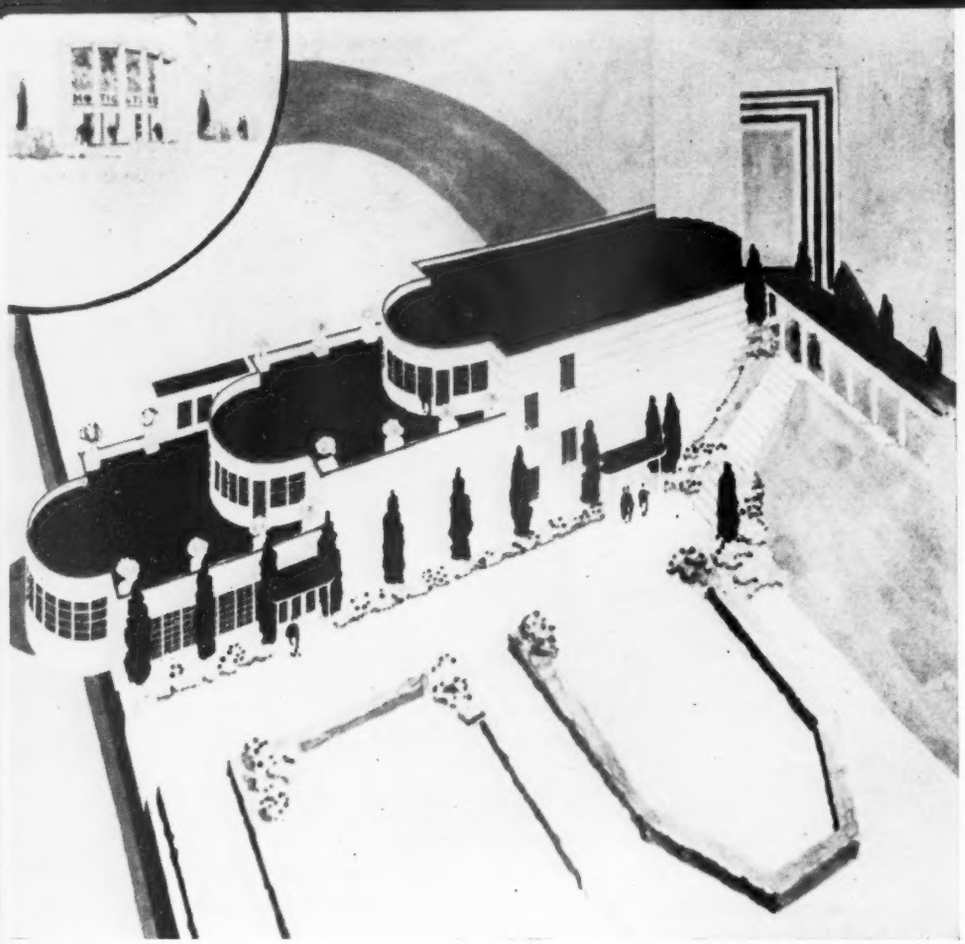
Typical of the many interesting exhibits that are planned is the "Romance of Iron and Steel" which will be located in the Lakeside Exhibition Hall, and which will depict the complete story of iron and steel, both primitive and modern. The visitor at this exhibit will start his tour at a chamber of a shaft mine. He will see a primitive furnace of the type used in prehistoric days in Africa and throughout Europe for several centuries.

The medieval development of the industry will be in two phases. The first will show the stone blast furnace used for making cast iron up to the 18th century. The second will illustrate the medieval forge with its hammer and water wheel and will picture the first use of steel.

With this introduction the visitor will next go to a reproduction of a chamber from a shaft mine. The chamber will be built around a central pillar of iron ore and will incorporate sections of track and mine cars. This will be followed by a model of an open pit mine which will be approximately 15 by 25 feet. A working miniature shovel will lend life to the display.

The journey of the ore from the mine throughout the Great Lakes area will next be shown. Included here will be a picturization of the meeting of ore with coal and limestone. In the very center of the entire space is to be a replica of a blast furnace approximating actual size. From the blast furnace the iron will be taken to the foundry with its casting floor, cupola and electric furnace.

The steel making department will center around a Bessemer converter and an open hearth furnace. The Bessemer display will be a cross-section of the converter which, through an ingenious use of colors and lights, will appear to be in actual op-



Architect's drawing of one of the proposed buildings for the Great Lakes Exposition

eration. The open hearth will be viewed from the charging floor where the raw materials of the steel plant will be piled as though ready for use in the furnace. The trip through the exhibit will be ended with a visit to the rolling mills and other shops which give shape to the huge ingots produced by the steelmaking furnace.

An automotive building, 180 by 500 feet, will house scores of exhibits centering around the automobile and its allied industries. This building will be architecturally featured by eight brilliantly painted and lighted pylons at each end.

A horticultural building being constructed on two levels will overlook the lake and three acres of historic and period gardens which will stretch for 1100 feet along the lake shore. Inside the building will be a continuous succession of flower shows, horticultural exhibits, and displays of home and garden furniture and decorations.

Streets of the World, an international village occupying ten acres and containing more than 100 structures, will send visitors through winding lanes which thread a maze of buildings of characteristic foreign architecture. The main entrance will resemble a European castle. An immense tournament field to be used for pageants, drills, and nationality group athletics will be laid out beside the village. A water gate facing on Lake Erie will provide a setting for picturesque and bizarre water craft of all nations.

Each nationality will occupy its own village, its occupants wearing their own multi-colored native costumes, and providing free entertainment to visitors by folk dances, singing, instrumental music and dramatic presentations.

On a specially built stage 100 feet wide and 200 feet long, a gigantic educational spectacle, Parade of the Years, will be given daily, showing the history of transportation. On the stage will be a canal, railroad tracks, and a roadway. Actual boats, locomotives, automobiles, and horse-drawn vehicles will be used. Seating capacity will be provided for 4000 people.

A Transportation Building will house many of the latest means of travel as well as some of the most primitive. A number of model homes will be constructed on a handsomely landscaped 5-acre section, to be known as the Court of the Great Lakes. Concerts will be given daily from a symphony shell large enough to accommodate 125 musicians and where seats will be provided for 2000. A Lagoon Theater will have a large stage built in the lake a short distance from shore to be used for aquatic events and spectacles. On the shore will be provision for 1800 spectators.

Admiral Byrd's exploration ship, the City of New York, will be on display, as will a modern fighting submarine and a sea plane. A mooring mast is to be erected for a blimp which will make regular passenger flights over the exposition and downtown Cleveland.

Only three weeks were required to underwrite the Great Lakes Exposition. The guarantee amounted to over one million dollars, ten per cent of which was signed by oil companies. Among the oil companies participating are: the Standard Oil Co. of Ohio, $50,000; National Refining Co., $10,000; Sun Oil Co., $10,000; Socony-Vacuum, $10,000; and the Gulf Refining Co., $10,000.

The exposition headquarters has announced that the Standard Oil Co. of Ohio will be one of the largest exhibitors. It has signed a contract for 6600 square feet of space and is planning an elaborate display.

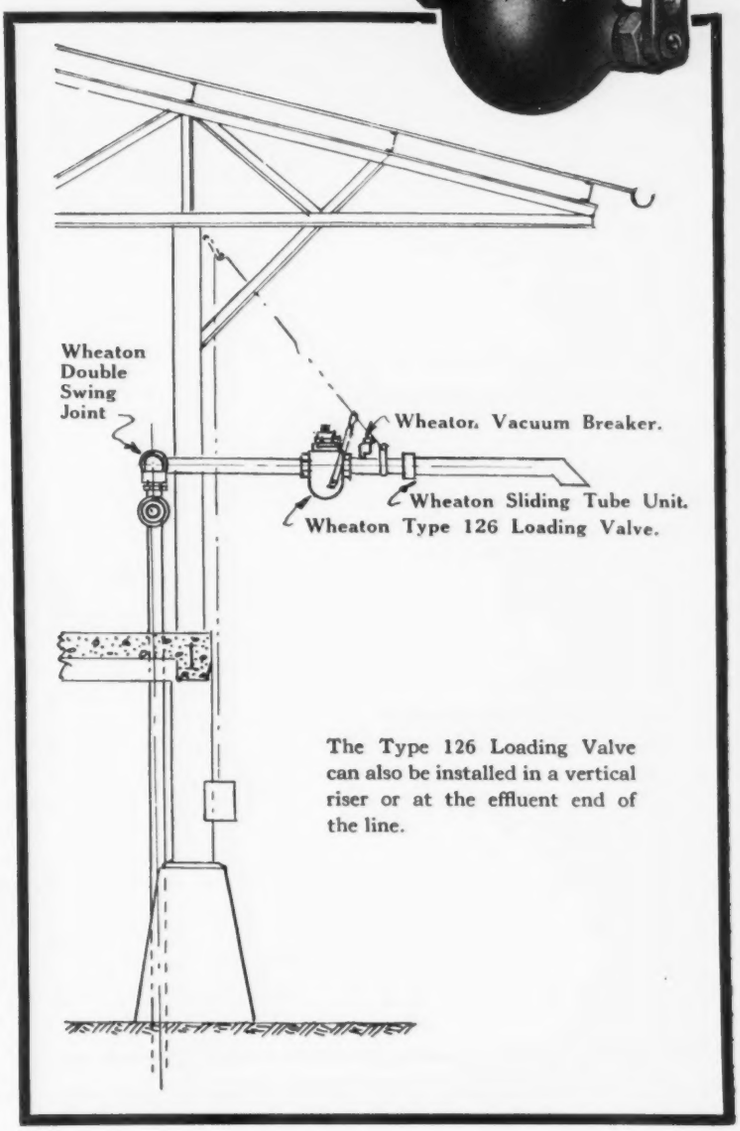
Oil companies having service stations within a 300-mile radius of Cleveland will be directly in the path of additional business as a result of increased automobile traffic heading toward the exposition. Oil companies within this radius can well afford to encourage people to drive to the exposition and get a share of the increased gallonage that is sure to develop within this 300-mile radius during July, August, and September.

There are 25 million people within an easy day's ride of Cleveland. There are approximately two million within 40 miles of Cleveland. Using those figures as a basis, it is conservatively estimated that four mil-

Here are 6 good reasons why you should use the Wheaton

TYPE 126 LOADING VALVE

- ***√ It Opens Easily***
- ***√ It Closes Quickly***
- ***√ It Prevents Shocks***
- ***√ It Tops Off Perfectly***
- ***√ It Prevents Spillage***
- ***√ It Lasts Longer***



The Type 126 Loading Valve can also be installed in a vertical riser or at the effluent end of the line.

● This Wheaton Type 126 Loading Valve, designed especially for pressure systems, opens *easily* and closes *quickly* without hammer, chatter or shock.

The piston in a closely-fit bonnet slows down the closing action. This prevents the shock which usually occurs when valves close instantaneously in piping systems where either vacuum, centrifugal, or piston pumps are used. This protects pump casings and meters against strain, fracture or leaking gaskets and joints, and reduces the wear on moving parts and the disc to a minimum.

The cam operates in a slot in the plunger, securing even and perfect seating. The operator can close the valve manually, should an obstruction cause it to stick open, thus preventing loss of product and fire hazard.

Easy opening is assured by the thrust of the cam against the monel metal roller, in conjunction with the by-pass of liquid (contained within the piston and the bonnet) through the ball check of the piston. An adjustment on the bonnet permits easy external adjustment to regulate the closing time. A locking device is provided to prevent theft.

Type 126 is made in 2, 2½, 3 and 4-inch sizes. Let us send you a sample now for your own tests—with the Wheaton money-back guarantee.

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FAUCETS - VALVES - JOINTS - COUPLINGS - FILLERS - NOZZLES - FITTINGS

lion people will attend the Great Lakes Exposition.

Based on past experience, estimators state that about 70 per cent of the people from outside Cleveland who attend the exposition will drive there in their automobiles. Of these, it is expected that 60 per cent will come from within a 60-mile radius; 70 per cent from within a 100-mile radius; 85 per cent from within a 150-mile radius; and the last 15 per cent will come from beyond the 150 mile radius.

Alert oil companies in this area will immediately see an opportunity in this exposition to increase gallonage by promoting the idea of having their customers drive to Cleveland. A concerted effort on the part of all oil companies in promoting a "Drive to Cleveland" movement will do much to create new business that did not exist before.

Cleveland is in an excellent position to handle visitors. It has had considerable experience in handling large conventions and gatherings. Its 12 million dollar public hall, containing three auditoriums seating 20,000 people, and its 80,000-seat stadium, are both to be used during the exposition.

Visitors who come in their cars will find parking facilities for 50,000 automobiles within easy walking distance of the exposition grounds. Of this total, there is convenient indoor parking space for 5000 cars.

By promoting the idea among their customers of driving to the Great Lakes Exposition, oil companies are not only offering them a vacation touring service but are also helping to create additional gasoline and oil consumption. Cleveland-bound motorists will be buying gasoline and oil. How many of them there are will depend to a considerable extent on how intensively oil companies themselves promote the plan to "Drive To The Great Lakes Exposition."

Felton Joins Franklin Creek

FRANKLIN, Pa.—Charles F. Felton has joined the sales staff of the Franklin Creek Refining Co. here. He recently resigned as sales manager for the Continental Refining Co., Oil City.

Motoring Regulations and More Taxes Is Trend in 1936 Legislatures

By T. W. Watson
N. P. N. Staff Writer

NEW YORK, March 9

CHAIN store tax bills and restrictions on motor vehicle operation, including safety regulations, appear to be the outstanding types of legislation affecting the oil industry proposed so far in 1936 state legislative sessions.

Efforts to increase state gasoline taxes and impose retail sales taxes apparently are diminishing, if the bills so far proposed are an indication of what may come later.

While 1936, being an election year, has only a relatively few regular legislative sessions compared to the odd years like 1935, the number is sufficient so that their activities give an indication of what may be expected when the 1937 sessions get under way.

MANY informed observers believe that next year's state legislatures will probably set an all-time record in the number and types of bills proposed, either to raise money or imposing restrictions of one kind or another.

What this might mean in the way of legislation can be inferred from 1935, when 44 regular and 22 special state sessions were held. During these sessions about 9000 bills were introduced which directly affected motor vehicles and highway transportation alone, according to the National Highway Users Conference. Of these, approximately 1200 were enacted into law.

State legislatures which will meet during 1936 are Alabama, Kentucky, Illinois, Massachusetts, Minnesota, Mississippi, New Jersey, New York, Ohio, Rhode Island, South Carolina, Vermont, Virginia, Maryland, Indiana, Pennsylvania and Louisiana. Those in two states, Minnesota and Vermont, already have adjourned. Indiana and Maryland did not start until March 4 and 5 respectively and Louisiana and Pennsylvnia will not meet until May. The others convened during January or February and are still in session.

The trend towards chain store legislation which was so marked during 1935 is continuing. In that year 75 chain store bills not exempting oil stations were introduced and 4 were enacted into laws. Of the 13 state legislatures which have met so far in 1936, nine have had chain store bills introduced. The most drastic is in New Jersey, proposing a tax ranging from $100 on four stores to $1500 annually on each over 20 stores. Bills also were introduced in the Massachusetts and South Carolina legislatures calling for an investigation of the methods and practices of chain stores.

The industry apparently can look forward to a plague of bills introduced in the 1937 legislative sessions which will call for the extension of restrictive carrier regulations and attempts to promulgate highway safety rules. All of the legislatures which met in regular session in 1935 had bills introduced which directly affected motor vehicle travel or use and so far the 1936 sessions have also produced a multitude of this type of bil. Many of these bills would impose unnecessary restrictions or are experimental and worthless in achieving the end sought, greater safety in driving.

A classification of this type of legislation is almost impossible due to the varied type of the bills proposed. One of the popular types of bill at the 1936 sessions is aimed at regulating the speed of trucks and automobiles. The truck speeds proposed are 30 to 40 miles per hour, while passenger car speeds of 40

PREFERRED AT HOME
PREFERRED ABROAD

WHITING, IND.—Babe Stapp, in his Champion-equipped Pirrung Special, won the 100 mile AAA Championship race at Roby Speedway. Sillimanite accounts for Champion's high resistance to heat and mechanical shock.

DETROIT, MICH.—The Notre Dame recently set a new world's record for Gold Cup class boats when it averaged 76.08 m.p.h. over the one mile course. Champion's exclusive Extra-Range insulator permitted wide open throttle.

FRED JACOBY, JR., a Champion booster, won the two highest honors for 1935 outboard racing. Champion's New Sillment Construction—the only gas tight construction—permits maximum compression ratios.

NEW JERSEY—The New Jersey Bell Telephone Company uses Champions to keep their 860 units operating efficiently. Dependability is characteristic of Champion Spark Plugs due to a score of patented features.

Greater Consumer Acceptance!

Sell the Spark Plugs Champions Use

If another manufacturer of spark plugs attempted to duplicate a Champion in every detail, he would be liable to suit on twenty-seven broad basic patents—to say nothing of many specific patents—all issued by the United States government. Every one of these patents represents a proved and re-proved Champion superiority. That is why Champions are preferred the world over—and why every important race victory at home and abroad in the last twelve years has been won with Champions. Why jeopardize the broad performance advantages of modern fuels and lubricants with spark plugs less positive and dependable than Champion Extra-Range Spark Plugs?

FOR GREATER PROFITS, TEST, CLEAN, AND REPLACE SPARK PLUGS AT REGULAR INTERVALS

to 50 miles per hour are called for.

Two states, New York and Massachusetts, have bills proposed which would make it a misdemeanor for a service station to sell motor fuel to an intoxicated driver, leaving the burden of proof upon the attendant. A definite trend towards compulsory inspection of automobiles and trucks also is noted. With some bills this takes the form of inspection of only non-resident cars, while others call for inspection of all cars. One bill introduced in New York seeks a semi-annual inspection of brakes, the work to be done by "reliable" service stations or garages which would be licensed for this purpose by the state.

Other typical bills relative to highway control call for safety glass in cars; increased age limits for drivers; heavier penalties for drunken drivers; headlight restrictions; truck load restrictions; trucks required to carry flares or lighting devices for use when parked on the highways; requiring two tail lights; compulsory insurance; limiting size of gasoline tank and amount of gasoline that can be imported into a state; compulsory courses in auto driving to be taught in public schools; requiring applicants for automobile license to furnish photographs and finger prints; and bills seeking registration and regulation of highway and tourist camps.

While a few bills for increases in the amount of automobile license fees have been introduced in 1936 legislatures, the majority of bills along this line tend the other way. One definite trend is towards changing the automobile registration date from the first of the year to the late spring or summer.

The trend in state gasoline taxes, during the 1936 legislative sessions, seems to be towards lower rates, or at least only the maintenance of present levels. Only in Virginia were bills introduced calling for increases, while in New York, Massachusetts, and Ohio attempts are being made to extend present emergency gasoline taxes for another year. In these same states, however, attempts are also being made to eliminate at least part of these emergency levies. In Kentucky a bill is being pushed which calls for a reduction of 1 cent in the gasoline tax rate. The states are continuing to pass bills memorializing Congress to eliminate the federal gasoline tax.

Sentiment against diversion of gasoline taxes apparently is becoming stronger, and bills were introduced in many of the 1936 sessions calling for the elimination of this practice. Attempts to prevent the giving of refunds also are being made in a number of legislatures, and if these fail they probably will be repeated in the 1937 sessions.

IN SIX of the 13 states which have been in legislative session in 1936, the sales tax has come up for consideration. In three of these states attempts are being made to reduce or repeal present sales taxes, while the others call for increases in the present tax. Apparently the trend in the sales tax failed is as strong or stronger against this tax than in favor of it. During the 1935 sessions, 65 sales tax bills not exempting the petroleum industry were introduced, while seven were enacted as laws. One of these laws, that in New Jersey, was later repealed at a special session of the legislature.

Other types of legislation affecting the oil industry are already being talked about for the 1937 legislative sessions, it appears, even though none of them may materialize as bills introduced during the present few sessions in 1936. Among these measures are license taxes on refining operations, legislative establishment of dealers' margins and gasoline price fixing; and heavier property taxes on pipelines.

The license on refinery operations was first enacted in Louisiana, apparently for political reasons. A bill was introduced in the Montana legislature in 1935 but was defeated. Several producing states are expected to consider such taxes during the 1937 sessions.

The idea of having the state fix gasoline prices, through the medium of declaring oil a public utility, was noted in 1935, when about 36 bills to that effect were proposed during legislative sessions. A bill of this type was proposed in Rhode Island in 1935 and a similar bill is now before its 1936 session.

A summary of the possible legislative trend in 1937, if such a trend can be forecast from the legislative tendencies of the past two years, would indicate that the oil industry should probably expect further spreading of most of its present tax-paying methods and more stringent regulations on motor vehicles and motoring in general.

Predict 37,100,000 Total Registration by 1960

NEW YORK, March 7.—The highways in 1960 will be traveled by about 31,100,000 passenger vehicles, an increase of about 39 per cent over the 22,400,000 registered in 1935, it is estimated by the American Petroleum Institute. It estimated that the present total of 3,600,000 motor trucks will increase to about 6,000,000 for a total registration in 1960 of 37,100,000.

The Institute believes that the number of miles traveled each year per car will continue to increase and that there will be a decided trend toward cheaper and lighter vehicles, consuming less fuel.

Following are estimates by five-year periods:

Year	Passenger Cars	Motor Trucks	Total Registration	Persons Per Car	Average Annual Fuel Consumption Gallons
1935	22,400,000	3,600,000	26,000,000	5.7	690
1940	24,900,000	4,300,000	29,200,000	5.3	730
1945	26,700,000	4,800,000	31,500,000	5.1	720
1950	28,600,000	5,300,000	33,900,000	4.9	710
1955	29,800,000	5,650,000	35,450,000	4.8	690
1960	31,100,000	6,000,000	37,100,000	4.7	670

Chemical Processes in the Refining Of Petroleum Distillates

By Jacque C. Morrell and Gustav Egloff*

Part 1

APPROXIMATELY one billion barrels (966,243,000) of crude oil were produced during 1935, from which a total of 427,120,000 barrels of gasoline were produced consisting of 219,583,000 barrels of straight-run gasoline and 207,537,000 barrels of cracked gasoline. It is significant that the cracked gasoline showed an increase of 13 per cent over 1934, whereas the straight-run gasoline increased only 6 per cent. From these data one may readily conclude that the problem of refining this gasoline to meet specifications and requirements is a most important one. It is likewise important that the process selected should attain the objective and the results desired in the most economical manner since even small savings on each barrel of gasoline refined will result in very large savings overall because of the great magnitude of the industry. During the past five years there has been a great movement in the direction of economy in refining to the point of its elimination in some cases without sacrifice of essential quality.

The present paper deals with the refining of petroleum distillates generally, but more specifically with the refining of cracked distillates since owing to their more complex composition, the refining methods which may be employed for them are applicable also to straight-run gasoline.

The processes selected for special discussion have attained the dignity of actual commercial practice, although there are many others which are now being developed which will no doubt assume great importance in the near future. The paper has been divided into sections, each one of which relates to the subject as a whole, but which is at the same time practically independent of the others.

Chemical Composition of Petroleum Distillates

The chemical composition of cracked gasoline is influenced by the type of crude oil and the fractions therefrom subjected to cracking and by the conditions of treatment, namely, the temperature, pressure and time. The composition of crude oils is so complex that no complete analyses have been made of any single petroleum. Even the lower boiling components, which are relatively easily determined compared with the higher boiling fractions, have been only partially investigated.

Since the composition of petroleums and their fractions has such a marked bearing on the composition of the cracked gasoline produced therefrom, it is considered important to submit a brief review of the work done in this connection.

Rossini and co-workers (1) determined the chemical constitution of the major part of the fraction of a Mid-Continent gasoline boiling below 180°C. They identified and isolated 35 hydrocarbons. Variations in the different general methods of fractionation were employed, including alteration of pressure from 760 to 0.001 mm. mercury; the addition of another substance permitting fractionation of a constant boiling mixture; crystallization, both by simple refrigeration and with the use of a suitable solvent; adsorption; and extraction. Table 1 shows the hydrocarbons isolated by Rossini and coworkers.

Fenske, Quiggle and Tongberg (2) fractionated a 262°C. end-point straight-run Pennsylvania gasoline. The curves plotted from these fractionations show alternate peaks and depressions corresponding to alternate aromatic and paraffinic fractions which had relatively high and low antiknock value respectively. Fractions approximating 19 pure materials were separated. The purity of the fractions was estimated from their boiling points and refractive indexes. There was no analysis for olefins.

Numerous other workers have separated or attempted to separate pure hydrocarbons from petroleum. Anderson and Erskine (3) analyzed natural gas gasoline and with eight fractionations were able to separate pentanes, hexanes and heptanes. Brown and Carr (4) separated cyclopentane, cyclohexane, benzene, toluene, pentanes, n- and iso-hexanes, n-heptane, n- and iso-octanes, and n-nonane, from a commercial straight-run gasoline from the Cabin Creek crude. They employed a fractionating column 18 feet high packed with modified Raschig rings.

The early workers employed simple stills for fractionation and their separation of pure compounds is therefore questionable. Among them were Pelouse and Cahours (5), Schorlemmer (6), and Beilstein and Kurbatow (7). The re-

*Universal Oil Products Co., Chicago.

1. Project No. 6, A.P.I. May 15, 1935.
2. J.I.E.C. 24, No. 5, 542-6 (1932).
3. J.I.E.C. 16, 263 (1924).
4. A.C.S., Tulsa, Oklahoma, April 5-9, (1926.).
5. Compt. rend. 54, 1241 (1862); 56, 505 (1863); 57, 62 (1863).
6. J. Chem. Soc. (London), 15, 419 (1863).
7. Ber. 13, 2028 (1880).

sults of these workers, as would be expected from the type of apparatus used, were not satisfactory. Later workers, among whom were Warren (8), Mabery (9), Young and Thomas (10), and Young (11), employed fractional condensers or dephlegmators. Bushong (12) also employed a special type dephlegmator. Evans (13) used several different types of fractionating columns and the results of these various workers were an improvement upon earlier work.

Sulfur, Oxygen and Nitrogen Compounds

In addition to hydrocarbons of the various groups, petroleums contain compounds of sulfur, oxygen and nitrogen, which should be found in the distillates resulting from the cracking of petroleum and its fractions.

Sulfur is found in various combinations and to a varying extent in practically all petroleums. Its presence has been considered generally undesirable because compounds such as mercaptans and hydrogen sulfide are odoriferous and corrosive.

Elementary sulfur and its compounds when present in gasoline generally contribute to corrosion of the motor and its parts. If corrosion occurs at all, the extent or degree to which it occurs depends upon the nature and per cent sulfur present as well as upon the temperature and other conditions of motor operation.

Thiophenes, hydrothiophenes, sulfonic acids, alkyl and sulfates, alkyl sulfides and mercaptans were among the first sulfur compounds separated from petroleum.

Borgstrom and Reid (14) compiled a list of the types of sulfur compounds that have been identified in petroleum:

Sulfur
Hydrogen sulfides
Sulfuric acid
Alkyl sulfates
Sulfonic acids
Carbon bisulfide
Alkyl mercaptans
Aryl mercaptans
Alkyl sulfides
Cyclic sulfides
Thiophene

Some work has been done in regard to the pyrolysis of sulfur compounds, the distribution of sulfur in the various products of cracking, and the determination of sulfur compounds in cracked distillates, which is discussed below:

Faragher, Morrell and Comay (15) investigated the thermal decomposition of organic sulfur compounds, with the following conclusions: The thermal decomposition of mercaptans produces hydrogen sulfide and elementary sulfur. Hydrogen sulfide, mercaptans and thiophene-like products are produced when sulfides are thermally decomposed. The disulfides produce hydrogen sulfide, elementary sulfur, sulfides and thiophene-like derivatives. Thiophenes undergo no decomposition even at temperatures of 1600°F. The compounds formed (and their relative proportions) from the thermal decomposition of the organic compounds of sulfur depend upn the temperature, time and the usual factors which determine the course of a chemical reaction.

Egloff and Morrell (16) showed the distribution of sulfur in the cracking of a Mexican gas oil as follows:

Birch and Norris (17) separated the following sulfur compounds from the light distillate obtained from the crude oil of Maidan-i-Naftun: ethyl mercaptan, isobutyl mercaptan, organic disulfides, diethyl disulfide, diisopropyl disulfide, diisobutyl disulfide. The sulfur compounds were recovered from spent soda used in washing the distillate, the yield from 40 gallons of the soda solution being 720 cc. (0.19 gallons) of sulfur compounds.

Faragher, Morrell and Monroe (18) developed a systematic procedure for the quantitative determination of sulfur and sulfur derivatives from petroleum

8. Proc. Am. Acad. Arts, Sci., 27, 56 (1891); 34, 92 (1898).
9. Proc. Am. Acad. Arts Sci., 31, 10 (1895).
10. J.A.C.S. (London), 71, 440 (1897).
11. Ibid.
12. J.I.E.C. 6, 888 (1914).
13. J. Soc. Chem. Ind. 38, 401T (1919).
14. Oil and Gas Journal, 26, No. 4, 352 (1927).
15. J.I.E.C. 20, 527-32 (1928).
16. Chem. & Met. Eng. 28, No. 14, 633-35 (1923).
17. J.A.C.S. 127, 898 (1925).
18. J.I.E.C. 19, 1281-84 (1927).

Table 1

Hydrocarbons Isolated

No.	Formula	Hydrocarbon	Estimated Percentage in Crude (see text, p 9. for explanation)	Purity of Best Sample (Mole Percent)	Published in RP No.*
		Paraffinic			
1	CH_4	Methane	**	**	...
2	C_2H_6	Ethane	**	**	...
3	C_3H_8	Propane	**	**	...
4	C_4H_{10}	n-Butane	**	**	...
5	C_5H_{12}	n-Pentane	**	**	...
6	C_5H_{12}	2-Methylbutane	**	**	...
7	C_6H_{14}	n-Hexane	0.5	98.3	239,311
8	C_6H_{14}	2, 3-Dimethylbutane			
9	C_6H_{14}	2-Methylpentane	0.3	95	239,311
10	C_6H_{14}	3-Methylpentane			
11	C_7H_{16}	n-Heptane	0.9	99.9	432
12	C_7H_{16}	2, 2-Dimethylpentane	0.03	54	458
13	C_7H_{16}	2-Methylhexane	0.25	99.9	542
14	C_7H_{16}	3-Methylhexane	***	***	...
15	C_8H_{18}	n-Octane	1.0	99.1	282
16	C_8H_{18}	2-Methylheptane	0.15	97	552
17	C_9H_{20}	n-Nonane	1.0	99.9	383
18	C_9H_{20}	2-Methyloctane	***	***	...
19	C_9H_{20}	2, 5-Dimethylheptane	***	***	...
20	$C_{10}H_{22}$	n-Decane	0.8	99.99	438
		Naphthenic			
21	C_5H_{10}	Cyclopentane	**	**	...
22	C_6H_{12}	Methylcyclopentane	0.2	98.9	375
23	C_6H_{12}	Cyclohexane	0.3	99.98	360
24	C_7H_{14}	Methylcyclohexane	0.3	99.9	432
25	C_7H_{14}	1, 1-Dimethylcyclopentane	0.04	95	542
26	C_8H_{16}	1, 3-Dimethylcyclohexane	0.15	98	...
27	C_8H_{16}	Ethylcyclohexane	0.1	95	...
28	C_9H_{18}	Nonanaphthene	0.1	99	745
		Aromatic			
29	C_6H_6	Benzene	0.08	99.8	311
30	C_7H_8	Toluene	0.3	**	280
31	C_8H_{10}	p-Xylene	0.04	99.9	501
32	C_8H_{10}	o-Xylene	0.12	99	501
33	C_8H_{10}	m-Xylene	0.12	99.9	501
34	C_8H_{10}	Ethylbenzene	0.03	94	554
35	C_9H_{12}	Hemimellitene	0.06	99.95	614
36	C_9H_{12}	Pseudocumene	0.2	99.9	614
37	C_9H_{12}	Mesitylene	0.02	99.95	614

* RP No. = Research Paper No. These papers are sold at nominal prices by the Superintendent of Documents, Government Printing Office, Washington, D. C.
** Not determined.
*** Determination in progress.

distillates as hydrogen sulfide, elementary sulfur, mercaptans, sulfides, disulfides, and different so-called residual sulfur comprising thiophenes and other types of sulfur compounds. Several untreated gasolines were analyzed by this method, with the following results:

Morrell and Egloff (19) determined the sulfur content of about 30 different heavy oils from various fields, comprising crude oils, topped crudes, fuel oils and distillate fractions comprising cracking stocks, to correlate the sulfur content in the charging stock with the per cent of sulfur in the cracked distillate and in the treated gasoline.

In a later paper these same authors (20) showed the distribution of sulfur in cracked distillates, both untreated and treated, and the effect of sulfuric acid concentration and temperature of treatment upon the removal of sulfur from the distillate.

Phenols

The presence of phenols in cracked distillates has been noted by several workers, notably Brooks and Parker (21) and Catlin (22). Catlin extracted cresylic acid from petroleum distillates and showed that ortho, meta and paracresols are present and may be recovered from the caustic wash of cracked distillates by acidification of the same. The presence of methylphenylcarbinol is also indicated.

Morrell and Egloff (23) show that lower boiling phenols are produced from the cracking of higher boiling phenols in addition to neutral oils and water. These lower boiling phenols will therefore be present in the gasoline fraction resulting from the cracking of the higher boiling phenols in charging stocks containing them.

Nitrogen Compounds

Bailey (24) has presented a review of the previous literature on the subject of nitrogen compounds in petroleum, special emphasis being placed on the classic work of Mabery and Wesson (25). The references are quoted which indicate that German petroleums are substantially free from nitrogen, that Caucasian oils contain 0.05 per cent, Roumanian oils 0.09 to 0.12 per cent, and Pennsylvania oils only 0.008 per cent, and that the petroleums of Japan, Ohio and California are rich in nitrogen compounds. The latter contain as high as 2.3 per cent total nitrogen, corresponding to about 30 per cent of nitrogen compounds.

After an extensive review of the analytical work done on the determination of amount and character of the nitrogen compounds in petroleum, it is concluded that they are principally methylated quinolines, particularly trimethyl quinoline and hydrogenated quinolines. The evidence indicates that none of the alkyl-substituting groups represent a long chain since there is an absence of propionic, butyric or higher fatty acids in the permanganate oxidation products of the separated compounds. There is evidence that the highest molecular weight nitrogen compound in crude from Santa Paula, California, has heptamethyl quinoline.

Very little of a definite nature is known about the nitrogen compounds in cracked gasoline.

Morrell and Egloff (26) indicate that the nitrogen bases present in higher boiling hydrocarbons such as coal tars when cracked would produce lower boiling nitrogen bases which will be found in the gasoline fraction. This, no doubt, also applies to corresponding petroleum fractions.

Hydrocarbons in Cracked Distillates

Practically all of the work on the chemical composition of cracked gasolines has been directed to the determination of hydrocarbon groups rather than individual compounds. The determination of these groups depends entirely upon the analytical method employed. These methods are quite numerous and the details of them cannot be given here. The four groups of hydrocarbons of principal interest in connection with the composition of cracked gasolines are the unsaturated, aromatic, naphthene and paraffin hydrocarbons.

ANALYTICAL METHODS

Determination of Olefins

One of the most common methods used to determine olefins is halogenation. Modifications of the procedures used for fatty oils have been employed, but while they are indicative of olefin content they have not proved quantitatively successful. The main difficulty is that substitution takes place concurrently with addition at the double bond. Various modifications of these methods have been proposed to correct the difficulties met.

At best, however, the results obtained by halogenation represent the "concentration" of double bonds rather than of ole-

19. Oil and Gas Journal, 25, No. 43, 150, 154, 157, 158 (1927).
20. World Petroleum Congress, London, July 24 (1933).
21. J.I.E.C. 16, No. 6, 587 (1924).
22. Ref. and Natr. Gaso. Mfr. 5, No. 4, 25 (1926).
23. 2nd Int. Conf. on Bituminous Coal Proc. 2, 580, 613 (1928).
24. Ref. & Nat. Gaso. Mfr., 4, No. 9, 46 (1925).
25. J.A.C.S., 42, 1014 (1920).
26. 2nd International Conference on Bituminous Coal Proc. 2, 580, 613 (1928).

Table 2

	Per Cent Sulfur by Weight	Per Cent Sulfur of Total
Charging stock	2.19	100
Pressure distillate	1.40	23.05
Residuum	3.84	62.08
Coke	5.22	2.01
Gas	8.5	12.9

Table 3

Analysis of Untreated Gasolines

	Cracked Gasoline		Straight-run Gasoline
Sulphur	Calif. (Midway) Crude Per Cent	Smackover Crude Per Cent	Panhandle Crude Per Cent
Elementary	None	None	0.05
Mercaptan (titration)	0.02	0.02	0.04
Disulfide	0.11	0.03	None
Sulfide	0.02	0.00	None
Residual	0.95	0.15	None
Hydrogen Sulfide	Present	Present	Present

finic hydrocarbons. In such cases the olefin content may be calculated by determining the average molecular weight of the oil and by assuming that the average molecular weight of the olefins was the same as that of the oil as a whole.

Other methods have been employed for the determination of olefins, for example, the formolite method which depends upon the formation of a resin when an oil containing olefins is refluxed with formaldehyde and a strong acid. This method is open to the objection that the resin formed does not correspond to all of the olefins present and furthermore that the reagent reacts with aromatic hydrocarbons.

Mercuric salts, particularly the acetate, react with olefins, and several methods of analysis have been devised for the determination of olefins based upon this reaction. A large excess of mercuric acetate must be used to cause all of the olefins to react and refluxing is necessary. Some of the unchanged oil is retained mechanically by the flocculent precipitate that forms.

Advantage has been taken of the heat of reaction of the olefins with sulfuric acid to determine the relationship between the percentage of olefins present and the quantity of heat evolved. This is not an accurate method for the determination of olefins in cracked gasoline. Furthermore, strong sulfuric acid reacts with aromatic hydrocarbons and to some extent with naphthenes and paraffins, and causes alkylation as well as polymerization and the various other reactions which occur with sulfuric acid and which will be referred to below. The problem is further complicated since each olefin has its own heat of reaction with sulfuric acid.

Various solvents have been employed to separate olefin and aromatic hydrocarbons from other hydrocarbons, and some difficulties are encountered in the application of these methods of analysis. The separation of the olefins and the aromatic hydrocarbons is usually incomplete, and the paraffin and naphthene hydrocarbons are dissolved to some extent. Some of the solvents which have been used are liquid sulfur dioxide, a solution of sulfur dioxide in acetone and other ketones, sulfoacetic acid, dimethyl sulfate, selenium oxychloride, methanol, acetic anhydride, aniline, nitrobenzene, dimethylaniline, ethyl tartrate, ethyl oxalate, acetoacetic ester, levulinic acid, phenylhydrazine and furfural. In some cases fairly sharp separation may be made if the correct quantity of reagent is used and the percentage of olefin and aromatic hydrocarbons lies within certain limits.

PERBENZOIC acid has been found to react with olefins and diolefins and other unsaturated compounds at low temperatures, and this reaction has been used as the basis of a method for the quantitative estimation of olefins.

Sulfuric acid is perhaps the most widely used reagent for the determination of hydrocarbon groups. It reacts with olefins to give five principal types of products, namely, alcohols, esters, polymers, oxidation products, and saturated hydrocarbons by reduction. Alkylation also occurs to a considerable extent when the other groups of hydrocarbons are present. The extent to which each of these reactions takes place is a function of the molecular weight and structure of the olefin, and the concentration of the acid. Polymerization increases with increase in molecular weight and up to a certain point would increase with the concentration of the acid, the maximum polymerization taking place in the presence of approximately 91 per cent acid. The alcohols that are formed directly are tertiary alcohols, which originate from tertiary olefins shown to be the most reactive. The separation of olefins and aromatic hydrocarbons is complicated further because these hydrocarbons condense with the formation of alkyl derivatives of the aromatic hydrocarbons. However, approximate separations may be made by various concentrations of acid. Acid having the strength of 80 per cent has been most generally proposed because it has very little action on the aromatic hydrocarbons. However, all of the olefins are not removed. Sulfuric acid stronger than 80 per cent has been proposed but is open to the objection of reaction with and alkylation of aromatic hydrocarbons.

Determination of Aromatic and Naphthene Hydrocarbons

Aromatic hydrocarbons may be determined by physical as well as chemical methods. The physical methods employed are density, index of refraction, and critical solution temperatures in various organic liquids. In general, the aromatic hydrocarbons have a much higher density and index of refraction than the other hydrocarbons. Also, they show an increase in the total volume when mixed with paraffin hydrocarbons, although this increase varies for the specific aromatic and paraffin hydrocarbons.

Various organic liquids have been found with which paraffin and naphthene hydrocarbons are not miscible at room temperature but in which the aromatic hydrocarbons dissolve readily. When aromatic hydrocarbons are dissolved in a mixture of paraffin and naphthenes the temperature at which complete miscibility with the solvent occurs is lowered. The higher the concentration of the aromatic hydrocarbons the greater is the lowering of the solution temperature. The solvent most widely used for this test is aniline. Another solvent used is nitrobenzene. This method furnishes a basis for the determination of naphthene hydrocarbons.

The chemical methods employed for the determination of aromatic hydrocarbons make use chiefly of sulfonation and nitration. Sulfuric acid of 98 per cent strength has been used widely for sulfonation. Nitration is also a commonly used method for the determination of aromatic hydrocarbons wherein fuming nitric acid is employed and the nitrated products dissolved in a known volume of sulfuric acid. The better method consists in the use of a nitration mixture of nitric and sulfuric acid so chosen that the nitro compounds concentrate in a separate layer, the volume of which is proportional

Good news—good business

"Octane number has no meaning unless the engine and conditions of determination are rigorously specified"—*E B Evans, E M Dodds and F H Garner in Journal of Institution of Petroleum Technologists, Vol 21, No 146*

That's right

Octane number by itself merely tells the motorist whether a gasoline will knock under certain conditions in a particular engine—not his own engine

But the high octane number in Dubbscracked gasoline is linked with other distinctive characteristics of its own that give more power, more silent miles to the gallon than other fuels—in every engine under all conditions—everywhere and always

Good news to the motorist

That good news is spreading fast and it brings good business to Dubbs refiners

Universal Oil Products Co
Chicago Illinois

Dubbs Cracking Process
Owner and Licensor

to the concentration of aromatic hydrocarbons in the oil.

Widely Used Methods for Hydrocarbon Group Analysis of Gasolines

None of the methods of analysis which have been developed are beyond criticism. All of them have limitations. Those most widely used are shown below:

Egloff and Morrell (27) developed a method of determining the unsaturated, aromatic, naphthene and paraffin hydrocarbons in cracked gasolines and undertook to relate the percentage composition of the four hydrocarbon groups to the antiknock properties of motor fuels.

Unsaturated hydrocarbons were determined by distilling the motor fuel up to 210° C. and treating the distillate with two volumes of 80 per cent sulfuric acid, which is stated to be without substantial effect on pure aromatic hydroarbons. Correction is made for the polymers boiling above 210°C.

The overhead to 210°C. obtained by redistillation of the 210° fraction on which the olefins were determined was treated with 2½ volumes of a nitration mixture consisting of 25 per cent nitric acid, 58 per cent sulfuric acid, and 17 per cent of water (which was found to be the optimum mixture) to determine aromatics. This forms a 3-liquid layer system with unreacted oil at the top, nitro derivatives in the center, and acid sludge on the bottom. The percentage of aromatic hydrocarbons is calculated from the volume of the middle layer.

To determine naphthenes the residual oil from the nitration treatment is used for the determination of aniline point, assuming that paraffin hydrocarbons are completely miscible at 70°C. and that the aniline point is lowered 0.3°C. for each one per cent of naphthenes present. The paraffins are estimated by difference.

Table 4 shows analyses of cracked gasolines from various stocks using this method:

Garner (28) removes olefins from cracked gasoline by the addition of fuming nitric acid, and the aniline point of the remaining oil is used for the estimation of the percentage of paraffin and naphthene hydrocarbons. The iodine number of the original gasoline is also determined, using the Hanus solution. Several analyses made according to this method were reported by Garner. He concluded that recracking of the gasoline increases the percentage of naphthenes.

Faragher, Morrell and Levine (29) developed the following analytical procedure for the determination of olefin and aromatic hydrocarbons: (a) determination of the total olefin - aromatic content by treatment of the hydrocarbon distillate with 91 per cent sulfuric acid, distillation to remove polymers, and final treatment with 98 per cent sulfuric acid, and (b) removal of olefins with sulfur monochloride, distillation to remove the olefin-free oil and determination of naphthenes by the aniline point method and paraffins by difference.

Analyses of cracked distillate from representative oils showing the olefin and aromatic content are given in Table 5.

Morrell and Levine (30) proposed an approximate method for the determination of olefin and aromatic hydrocarbons which is accurate to within 1 to 3 per cent and which is considerably shorter than methods heretofore proposed. The sum of the olefins is determined by treatment with 91 per cent and 98 per cent sulfuric acid as described in Faragher, Morrell and Levine (31), and the olefin concentrations may then be calculated from the weight of residue remaining after the distillation of the oil obtained upon treatment with 91 per cent sulfuric acid by the use of empirical formulas.

The Kattwinkel (32) method is also widely used for the determination of aromatics and olefins in oils. It is a rapid method and gives good results. The general principle of the method is that concentrated sulfuric acid containing small percentages of boric acid has no reaction on aromatics in mixtures but reacts with and removes olefins, while similarly sulfuric acid containing minor percentages of phosphorous pentoxide reacts with both aromatics and olefins to effect their removal. The reagent for determining both aromatics and olefins is made by adding 30 gr. of phosphoric pentoxide to 100 gr. of sulfuric acid, the phosphorous pentoxide being added gradually with stirring and cooling. The reagent for unsaturates alone is made by adding 5 gr. of boric acid to 100 cc. of concentrated sulfuric acid, heating if necessary to effect solution. Aromatics and unsaturates are determined together by using 30 cc. of the first reagent and 10 cc. of the oil in a nitration tube, shaking for five minutes with cooling and noting the percentage decrease in volume of the oil layer. Unsaturated hydrocarbons are determined by us-

27. J.I.E.C. 18, No. 4, 354 (1926).

28. J.I.P.T. 14, 695 (1928).
29. J.I.E.C., Anal. Ed. 2, 18, (1930).

30. J.I.E.C. 4, 321 (1932).
31. J.I.E.C. Anal. Ed. 2, 18 (1930).

Table 4

Hydrocarbons	Braman, Tonkawa, Kansas Topped Crude	Kentucky Fuel Oil	Smackover Heavy Crude	North Texas Fuel Oil	Lost Soldier Wyoming Crude
Unsaturated	16.1	14.4	14.7	16.0	11.7
Aromatic	17.8	22.5	27.5	18.6	15.0
Naphthene	12.8	10.0	21.2	11.7	15.4
Paraffin	53.3	53.1	36.6	53.7	57.9
Aromatic equivalent	24.2	27.9	36.7	24.7	21.2
Highest useful compression ratio	5.6	5.7	5.9	5.6	5.5

Table 5

Oil	Olefins	Aromatics
Smackover	31.1	14.4
Venezuela	20.6	17.8
Mexican (Panuco)	27.8	15.1
Panhandle	32.8	10.5
West Texas (Pecos)	30.8	13.1
California	21.4	14.1
Oklahoma (Seminole)	29.1	9.0
Pennsylvania (1)	25.5	9.9
Pennsylvania (2)	34.6	7.1

ing the same proportions of the second reagent.

Influence of Cracking Conditions and Charging Stock on Composition of Cracked Gasoline

The chemical composition of cracked gasoline is influenced not only by the type of oil undergoing treatment but also by the conditions of treatment, namely, the temperature, pressure and time. Despite the large amount of work done to date, there is a big field for the systematic investigation of this subject. In fact, one may say that the field is scarcely scratched. Furthermore, practically no work has been done on the composition of cracked distillates from the viewpoint of the individual hydrocarbons contained therein.

IN HIGH temperature cracked gasolines the analytical methods already discussed and the hydrocarbon groups referred to are considered in the same manner as for cracked distillates produced at relatively low temperatures. In addition to the mono-olefins, the diolefins become of increasing importance with cracked distillates produced at high temperatures. Birch and Scott (33) identified several diolefins in the lower fractions from vapor phase cracked gasoline. Conjugated hydrocarbons were estimated quantitatively according to the method of Diels and Adler (34), by the preparation of acid anhydrides formed by the addition of maleic anhydride to hydrocarbons with conjugated double bonds. These additional products are formed merely by allowing the diolefin and maleic anhydride to react in benzene solutions at ordinary temperatures. The products are characterized by definite crystalline form and by their melting points. Butadiene, piperylene, isoprene and cyclopentadiene were all present and easily separated.

From all of the foregoing it is evident that while considerable work has been done on the composition of cracked distillates in respect to the hydrocarbon groups contained therein namely, the paraffins, naphthenes, olefins and aromatics, our knowledge of the individual compounds in cracked distillates is meager. One may conclude from the group hydrocarbon analyses that the composition of cracked distillates varies as a function of cracking conditions, viz., temperature, pressure and time, to which the stock undergoing treatment had been subjected, and also the type of oil undergoing treatment. An investigation to determine the individual components of cracked gasolines would have to include a large number of distillates based upon the source of the charging stock as well as the conditions of treatment. The methods applied to the analysis of the lower boiling fractions of crude oils, such as the various modifications of fractionation, would hardly suffice for their determination in cracked gasolines, but would have to be supplemented by chemical methods for the separation and identification of the individual hydrocarbons by the preparation of chemical derivatives. Without question, this field is a fertile and fascinating one.

Sulfuric Acid Treatment of Cracked Gasoline

It may be stated briefly that cracked distillates contain the four major groups of hydrocarbons—namely, unsaturated, aromatic, naphthene and paraffin hydrocarbons. The paraffins, with the possible exception of methane, react to some extent with sulfuric acid containing high percentages of sulfur trioxide, the reaction being more pronounced with increasing temperatures. The lower members of the naphthene series react with concentrated sulfuric acid, the reactivity decreasing with increasing molecular weight. Aromatic hydrocarbons dissolve to a considerable extent in sulfuric acid, particularly in concentrations above 80 per cent, the solubility increasing as the concentration of the acid increases. The unsaturated or olefin hydrocarbons are the most reactive group and will therefore be discussed in some detail.

It is generally known that sulfuric acid reacts with olefins to form four types of products, namely, esters, alcohols, polymers and oxidation products. The extent to which each of these reactions occurs is a function not only of the molecular weight, but also of the structure of the olefins and the concentration of the acid. Polymerization increases with the concentration of acid to a maximum with 91 per cent acid. Tertiary alcohols are formed directly by treatment with sulfuric acid and originate from tertiary olefins, which have been shown to be the most reactive. Condensation of olefins with aromatic hydrocarbons has been reported and reduction of olefins by sulfuric acid treatment has been indicated by several workers. There is also some evidence that aromatic hydrocarbons may condense with paraffins when cracked distillates are treated with sulfuric acid.

POLYMERIZATION of unsaturated hydrocarbons, in general, may be defined as the union of two or more molecules to form a larger molecule. Condensation reactions involving the union of two or more unlike molecules may for present purposes also be included under the general term "polymerization."

In the sulfuric acid treatment of cracked distillates the losses may be divided into two components, namely, the solution and the polymerization losses. The solution loss is the volume or percentage of distillate which is removed by reaction with the acid and solution in the sludge. The polymerization loss refers to the portion of the gasoline which is converted into higher boiling hydrocarbon fractions.

The polymerization loss may be calculated by the following formula:

$$\frac{A\,(\,B - (C + D)\,)}{B}$$

A equals 100 minus the per cent solution loss,
B equals per cent 410°F. end-

32. Brennstoff-Chemie, 8, No. 22, 353 (1927).
33. J.I.E.C. 24, No. 1, 49 (1932).
34. Ann. 460, 98 (1928), 470, 101 (1929), 476, 102 (1929); see also Farmer and Warren, J.A.C.S. 1929, 897.

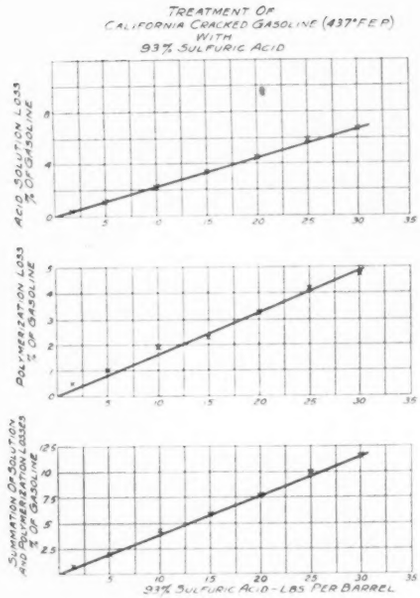

TREATMENT OF
CALIFORNIA CRACKED GASOLINE (437°F.E.P.)
WITH
93% SULFURIC ACID
ACID SOLUTION LOSS % OF GASOLINE
POLYMERIZATION LOSS % OF GASOLINE
SUM OF SOLUTION AND POLYMERIZATION LOSSES % OF GASOLINE
93% SULFURIC ACID - LBS. PER BARREL

Fig. 1

point gasoline in untreated cracked distillate,

C equals per cent 410°F. end-point gasoline in treated cracked distillate,

D equals per cent distillation loss on distilling treated cracked distillate.

The formula gives the polymerization loss in terms of gasoline content in the untreated cracked distillate and not in terms of the treated cracked distillate.

The treatment of cracked distillates from Pennsylvania and Mid-continent stocks with sulfuric acid is rapidly decreasing owing to the introduction of improved methods and more important to the elimination of treating either in whole or in part employing inhibitors for color and gum stability and dyes for color.

As an example of the results of treating a cracked California gasoline with varying amounts of acid at room temperature to determine the acid solution losses, polymer losses and sulfur reductions, the data in Table 6 and curves in Figs. 1 and 2 are given.

A comparison was made in the treatment of straight run gasoline from Poza Rica Mexican crude oil and from the cracked gasoline obtained by the cracking of the gas oil obtained from the crude and from

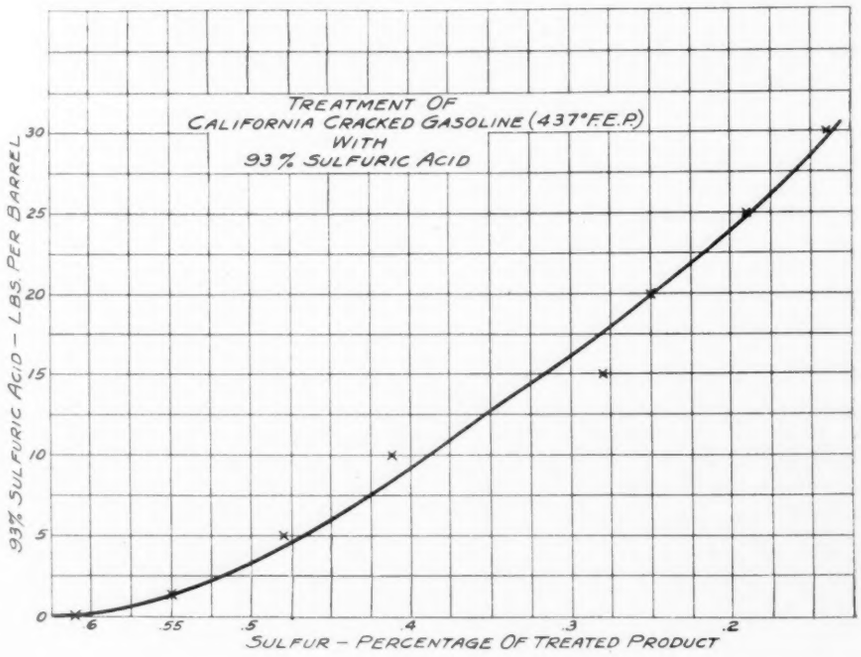


Fig. 2

Table 6

California Cracked Gasoline

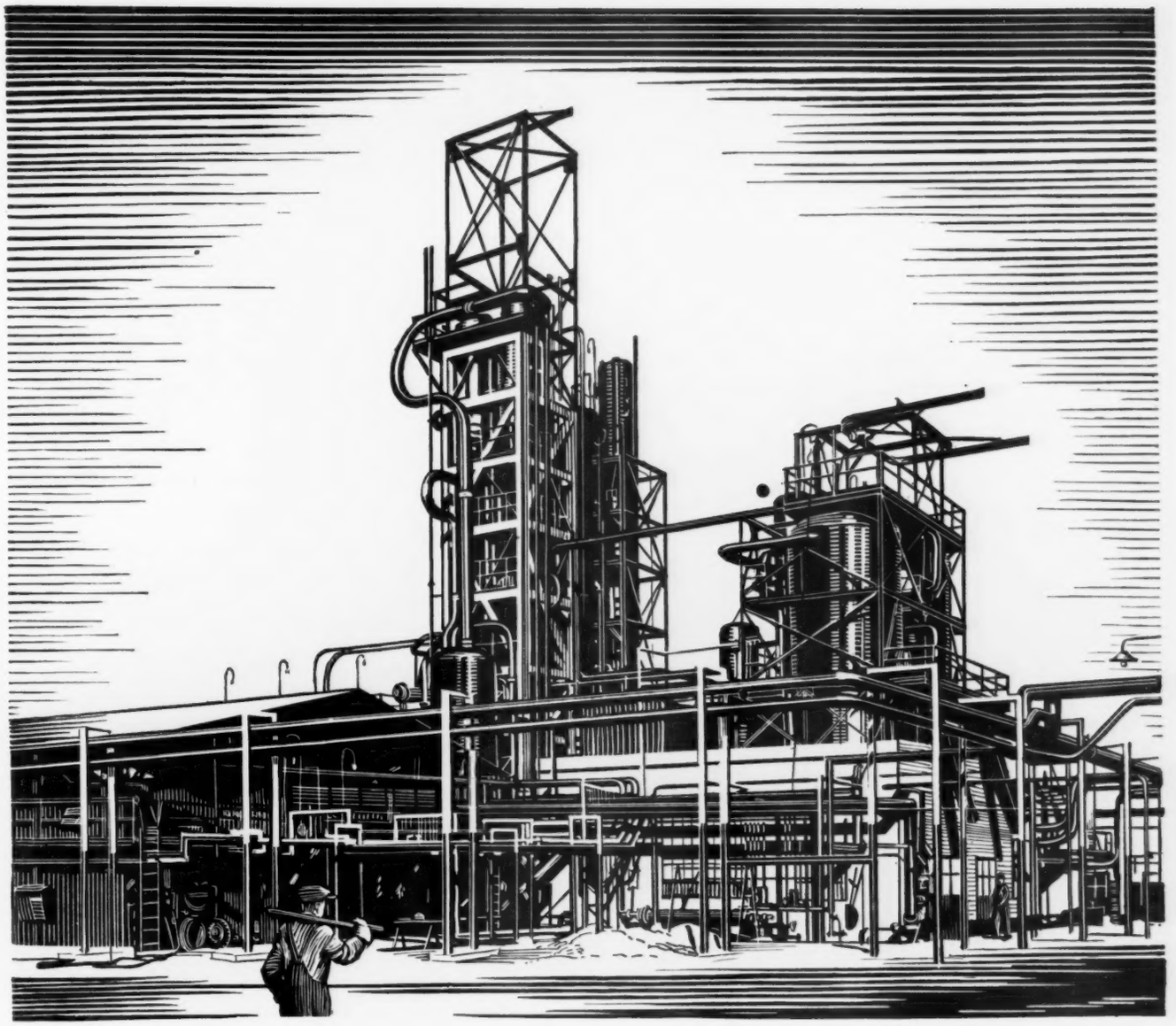
Treatment—Acid, lbs. /bbl.	Un-treated	1½	5	10	15	20	25	30
Acid Solution Loss		0.30	1.0	2.3	3.4	4.4	5.8	6.7
Polymer. Loss		0.50	1.0	1.9	2.3	3.2	4.1	4.7
Gravity, °A.P.I.	50.3	52.5	52.6	52.4	52.3	52.3	52.1	52.2
Color, °Saybolt	Red	Yellow	17	19	22	22	21	20
Color, Stability*		..	16	18	21	21	21	20
Gum, Mgs./100 cc. Copper Dish,								
Without Inhibitor	472	232	38	13	6	6	8	7
With 0.025% Inhibitor		141	14	5	4	4	5	7
Sulfur, %	0.61	0.55	0.48	0.41	0.28	0.25	0.19	0.14
Octane Number	76	74	72.5	72.5	72.0	72.0	71.5	69.5
100 cc. A.S.T.M. Distillation								
I.B.P. °F.	118	130	120	120	122	124	124	124
5%	162	163	161	154	152	160	160	160
10	183	179	182	174	172	180	183	183
20	215	208	211	204	206	216	216	218
30	245	237	240	234	236	244	245	250
40	274	263	265	261	262	269	270	274
50	300	285	288	285	286	291	293	298
60	326	308	311	308	310	314	314	320
70	351	324	333	331	332	336	335	334
80	377	356	358	351	356	360	359	364
90	404	385	386	384	384	384	385	386
E.P. °F.	438	416	418	418	418	421	420	419
Oxygen Bomb Stability—Induction Period—Minutes								
Without Inhibitor	600	220	555—All samples cut at 600 minutes—					
With 0.025% Inhibitor	600	265—All inhibitor samples cut at 600 min.—						

*Equivalent to 2 hours noon June sunlight.

the reduced crude. The yield of gasoline in per cent by volume from the gas oil which was cracked was 55 per cent and from the reduced crude 24 per cent. The gasolines were treated with sulfuric acid and sweetened with sodium plumbite with the following results. These data are given for comparative purposes and apply only to the particular type of crude under consideration.

In the treatment of reformed gasolines from Colon crude oil the straight run gasoline obtained therefrom was reformed at a pressure of 750 pounds per square inch and at a temperature of approximately 1000°F. and the resulting gasoline was treated.

The treatment used consisted of agitation with one and two pounds of 93 per cent sulfuric acid per barrel, neutralization with caustic soda and redistillation with fire and steam. No



Crudes covering a wide range of gravity are handled in a KELLOGG COMBINATION UNIT

● Recently a Kellogg combination topping and cracking unit was designed to process five crudes covering a wide range of gravity and straight run gasoline content.

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sweetening was required. The results of these tests are summarized in Table 8.

In the desulfurization of cracked gasoline Morrell (35) has shown that split plumbite or caustic treatments i.e. wherein the oil is treated prior to and after the acid treatment with either caustic or plumbite has a very marked advantage over the ordinary acid caustic or plumbite treatments

Morrell, Wirth and Strong (36) have shown that the split plumbite or split caustic method of sulfuric acid treatment, that is, wherein the oil is treated either with plumbite or caustic prior to and following the acid treatment, there are marked advantages in the desulfurization of a blend containing cracked gasoline from an Oregon Basin crude, which is most refractory to treat in this respect, and that the losses and amount of acid required are less than when the simple acid treatment is used; also that the separate treatment of individual fractions of the cracked distillate shows improved results in respect to desulfurization when compared with the treatment of the entire distillate. This is summed up in Table 9.

Low Temperature Treatment of Cracked Distillate

Notable among the methods proposed for the treatment of cracked distillates with sulfuric acid primarily for the purpose of desulfurization and reducing polymerization and solutions losses is the low temperature treatment described by Halloran (37). This process comprises washing the cracked distillate with caustic soda, subjecting the distillate to drying treatment with acid sludge, cooling the distillate to approximately —5°F. in a multi-stage cooling system during the treatment with the fresh sulfuric acid, separating and recirculating the sludge and finally washing and neutralizing the treated distillate. Low temperature treatment of cracked distillates primarily serves the purpose of effecting partial desulfurization with a substantial reduction of the usual large losses by reaction solution and polymerization. In some cases the desulfurization of the distillate is more marked than with treatment at normal temperatures but in some cases desulfurization has not been improved by the low temperature treatment. This process has recently been combined with the Stratford Process which involves a continuous treatment with sulfuric acid by quickly contacting the acid with the oil and separating by centrifuging the acid sludge in minimum time.

Halloran (38) shows the following results (Table 10) in the treatment of a California cracked naphtha at various temperatures from 5°F. to 166°F. (the acid being added at atmospheric temperature in the latter case):

A flow diagram of the process is shown in Fig. 3.

Halloran points out that this process is a major advance in the art of refining cracked gasolines which contain the more stable types or sulfur compounds and that another important application of the process is the refinement of gasolines containing large amounts of gum-forming constituents such as those produced by vapor phase cracking, and particularly where these gasolines are also characterized by a high sulfur content.

In summing up the advantages of the low temperature treating process as the result of and especially in the commercial operation of a plant operating at 0° to 10°F., Halloran (39) comes to the following

35. National Petroleum News, Dec. 17, 1930 to Jan. 21, 1931.

36. Oil & Gas Journal, 32, 12 (July 20, 1933.)

37. Oil and Gas Journal, 26, No. 29 P. 36 (1927).

38. World Petroleum Congress, 2, p. 3 (1933).

Table 7

Cracked Gasoline From:	Straight-Run Gasoline	Gas Oil	Reduced Crude
Treatment—			
Acid, Lb./Bbl.	1	1	5
Plumbite, °Be.	8	8	16
Treating Loss, %	0.6	1.0	2.9
Analysis of Products—			
Color °Saybolt	30	30	29
Gum, Mg./100 cc. (Copper Dish)	1	2	8
Oxygen Bomb Stability—			
Induction Period, Minutes	990+	510	790
Sulfur, %	0.05	0.09	0.15
Octane Number (Research)	74	76	72

Table 8

Reformed Gasoline Octane No.	60			69		
Treatment	None	Acid	Acid	None	Acid	Acid
Acid—Lb./Bbl.	....	1	2	..	1	2
Treating Losses						
Acid Solution Loss, %	..	0.2	0.8	..	0.5	1.1
Polymerization Loss, %	..	0.0	0.3	..	0.0	0.5
Distillation Loss, %	..	0.8	0.3	..	0.5	0.2
Total Loss, %	..	1.0	1.4	..	1.0	1.8
Yields						
Finished Cracked Gasoline— % Raw Gasoline	..	99.0	98.6	..	99.0	98.2
Raw Gasoline— % Charging Stock	90.7	90.7	90.7	82.8	82.8	82.8
Finished Cracked Gasoline— % Charging Stock	..	89.8	89.5	..	82.0	81.4
Analyses of Treated Products						
Gravity, °A.P.I.	58.8	58.7	59.3	60.1	59.9	59.6
Color °Saybolt	14	24	30+	13	25	30+
Color Stability*	..	20	25	..	21	26
Doctor Test	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
Gum, Mg./100 cc. (Copper Dish)						
Without Inhibitor	7	1	1	10	1	0
With 0.01% Univ. Inhibitor	6	..	..	3	..	..
With 0.025% Univ. Inhibitor	6	1	1	2	2	1
Sulfur, %	0.03	0.01	0.01	0.03	0.01	0.01
Vapor Pressure, Reid—Lb./Sq. In.	5.6	5.5	..	9.0	8.0	..
Oxygen Bomb Stability—						
Induction Period, Minutes—						
Without Inhibitor	405	240	600	265	275	730
With 0.01% Univ. Inhibitor	550	..	..	375	..	..
With 0.025% Univ. Inhibitor	575+	1000+	1000+	490	1000+	1000+
Octane No.—Motor Method	60	59	59	69	68	67
Tetraethyl Lead Requirement— cc./Gal. per 68 Octane No.	0.8	0.8	..	..	..	..

*Color °Saybolt, after exposure equivalent to 2 hours noon June sunlight.

conclusions in comparison with ordinary acid treatment.

1. The amount of acid required is less in cold treatment because it acts partly as a solvent for sulfur compounds;

2. Polymerization losses are lower;

3. There is a higher yield due to reduction in polymerization losses;

4. There is a retention of antiknock constituents;

5. There is less emulsion trouble in the water and caustic washes following the acid treatment;

6. There are decreased caustic requirements in rerunning treated distillates;

7. The acid sludge is more easily regenerated;

8. The cold treated stocks are more easily sweetened since mercaptans have been removed by the solvent action of the acid at low temperatures:

9. There is always less gum in cold treated stocks due to less oxidation in the acid treatment;

10. The gasoline has improved color stability.

The article contains a table showing the savings in cold treating compared to normal treatment.

Table 11 shows the results of laboratory treatment of a cracked gasoline from a California crude oil employing constant amounts of acid and at a temperature varying from 0° to 100°F.

Cooke and Hayford (40) have described the Stratford Process in the treatment of a cracked West Texas pressure distillate containing 0.4 to 0.5 per cent sulfur comprising quick contact and centrifugal separation acid treating process with counterflow treatment in three stages. The contact time in each mixer was less than 1 second and the total time before complete separation about 3 seconds The data indicate that 13.6 pounds of 98 per cent sulfuric acid was used per barrel and that there was a polymerization loss of 3.55 per cent in reducing the sulfur to 0.1 per cent. This did not, however, include the low temperature feature of the present Stratford Process.

The combination process is shown in Fig. 4, which has been simplified for purposes of illustration. It comprises a counterflow system wherein the raw distillate is passed through a cooler in heat exchange with the treated distillate. After being chilled the distillate is passed into a contactor wherein it is contacted with the sludge from the final distillate and is then passed in counterflow through a series of three chillers, contactors and separators, being treated with the fresh acid in the third stage, with a mixture of fresh acid and sludge in the second stage, and with sludge acid in the first stage, and finally being neutralized with caustic soda. This process has very marked advantages where it is necessary to effect desulfurization of the distillate.

The results in Table 12 show the treatment of California cracked gasoline with sulfuric acid at temperatures varying from 0°F. to 70°F.

The following conclusions may be drawn from the results shown in Table 12:

1. Reduced temperature did

39. Nat'l. Pet. News, 25, No. 30, 35 (1933).

40. World Petroleum, 5, No. 4, 123-8 (1934).

Table 10

Treatment of California Cracked Naphtha at Various Temperatures to Produce Gasoline of U.S.M.G. Boiling Points Containing 0.15% Sulfur

Gravity of Naphtha	53.7° API
% Sulfur	0.71
% Gaso. (U.S.M.G.)	93.0

Maximum Temperature of Treatment	5°F.	20°F.	30°F.	45°F.	60°F.	100°F.	166°F.*
Lbs. of 98% Acid per gal. of Naphtha	0.60	0.51	0.60	0.63	0.84	1.15	1.50
% Sulfur in Treated Naphtha	0.27	0.38	0.36	0.49	0.58	0.74	0.79
% Gaso. in Treated Naphtha	88.7	90.5	86.6	84.1	79.8	74.0	62.2
Polymerization Loss**	4.6	2.7	6.9	9.6	14.2	20.5	33.1
Acid-Treating Yield	92.7	92.7	92.8	91.8	90.2	88.3	78.9
Re-run Yield	88.7	90.5	86.6	84.1	79.8	74.0	62.2
Net Gaso. Yield from Cracked Naphtha	82.3	83.9	80.3	77.2	72.0	65.3	49.1

*Normal treatment—acid added at atmospheric temperature.
**% of original crude gasoline content lost by polymerization.

Table 9

Treatment	Original	Simple acid-caustic		Split Plumbite			Split caustic	Split Plumbite 0-30% fraction 2 lbs., 30-100% fraction 10.5 lbs.	Split Plumbite 0-40% fraction 3 lbs., 40-100% fraction 11 lbs.	Split Plumbite 0-50% fraction 4 lbs., 50-100% fraction 12 lbs.
Acid, lbs. per barrel	None	8	8	10	12	14	12	8	8	8
Concentration, per cent	..	93	93	93	93	93	93	93	93	93
Solution loss, per cent	..	2.6	2.9	2.9	3.4	3.9	3.4	2.7	2.9	3.3
Polymerization loss, per cent	..	0.7	0.9	0.7	1.3	1.8	1.3	0.7	0.8	0.9
Gravity, deg. A.P.I.	57.9	57.2	57.1	56.2	56.3	58.3	55.7	56.9	56.7	56.6
Endpoint, deg. Fahr.	401	396	398	390	390	390	392	390	391	390
Color, deg. Saybolt	Red	26	29	27	30+	30+	26	30+	30+	30+
Color stability*	..	25	26	25	30	29	25	30	29	29
Sulfur, per cent	0.43	0.22	0.20	0.16	0.13	0.12	0.14	0.15	0.17	0.17

*Equivalent to two hours' noon June sunlight.

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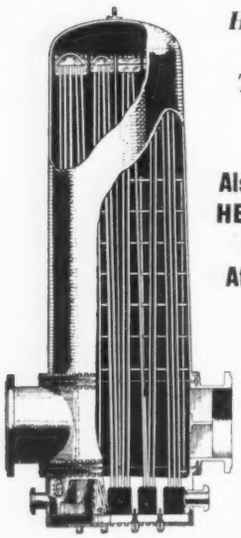

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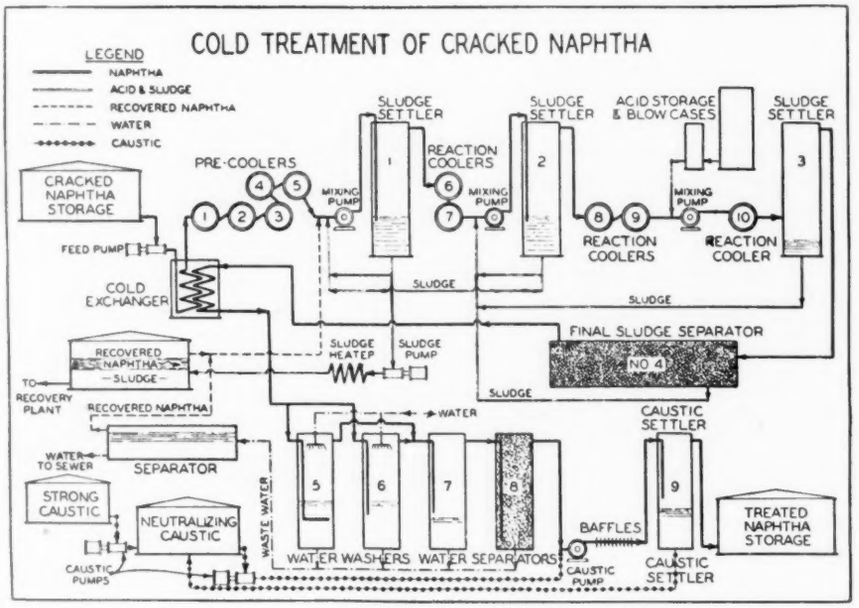

Fig. 3

not increase sulfur reduction using 93 per cent sulfuric acid, split caustic, or simple acid treatment.

2. With 98 per cent acid and split caustic sulfur reduction was slightly increased with decreased temperature.

3. Sulfur reduction was increased by increase of amount of acid at each temperature.

4. Loss in octane number was slightly less at reduced temperature.

5. With split caustic and 93 per cent acid, the induction period increased with increase of acid at all temperatures; the greatest increase was at 18° F.

6. The induction period was reduced much more by split caustic than by simple acid.

7. With simple acid treatment, the induction period was

Table 11

Treatment of Cracked Distillates with 98 Per Cent Sulfuric Acid At Varying Temperatures

Type of Cracked Distillate	Temp. °F.	Lbs./ Bbl.	Per Cent Solution Loss	Per Cent Polymers	Per Cent Sulfur in Finished Gasoline
Californian D	100	30	8.1	9.7	0.13
(0.59% S	70	30	7.7	6 8	0.11
86.7% 410° F. E. P.)....	40	30	7.0	4.9	0.08
	18	30	7.5	1.7	0.08
	0	30	7.2	1.6	0.07

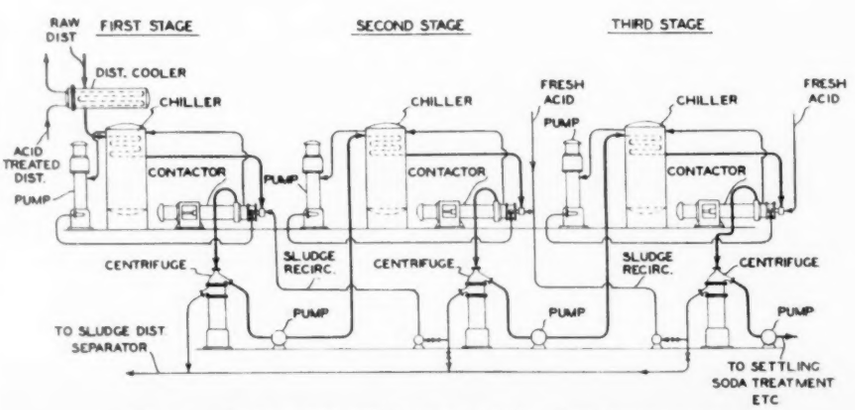

Fig. 4—Three stage application of the Stratford process

decreased with decreasing temperature. The inhibitor susceptibility was increased.

8. Solution and polymerization losses (a) increased with increasing quantities of acid at all temperatures; (b) decreased with decreasing temperature with any quantity of acid; (c) were the same with either simple acid or split caustic at all temperatures.

From a large number of experiments by Morrell & Egloff (41) it has been shown that while the extent of polymerization and solution is very greatly reduced by reduction in temperature, the sulfur content of the treated oil may show very little change. This is indicated in Table 13, and similar results have been shown with Venezuelan and other cracked distillates. However, that a marked change may take place even in sulfur content is shown in Table 14.

It may be generally concluded that polymerization is apparently a function of temperature and that the lower the temperature the less the polymerization. The solution loss apparently is not as directly dependent on the temperature as polymerization.

Partial Treatment of Cracked Distillate

One of the most important principles in the development of treating, both from the viewpoint of economy and improved results in the use of sulfuric acid and other reagents, has been the removal of a relatively light overhead fraction requiring practically no treatment or a very mild treatment only, with acid or some other more drastic treatment of the bottoms or side cut from the fractionating column, and combining the distillate from the acid treated material with the relatively untreated fraction.

This process and improvements thereon are disclosed by

41. World Pet. Conf., London, July 24, 1933, Oil & Gas Journal.

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Morrell (42). This process is widely used, the savings being dependent upon the amount of overhead distillate which can be removed with little or no treatment and the percentage of side cuts or bottom cuts which are treated according to requirements. For example, with a distillate obtained in the cracking of a West Texas charging stock over 40 per cent of the gasoline fraction was removed and required only an alkaline wash using soda ash or caustic soda. The side cut was acid treated, neutralized and redistilled. An overhead product of better than 28 color was obtained by this treatment, with a saving of over 50 per cent in acid consumption. In the case of Mid-Continent and Pennsylvania charging stocks from 50 to 70 per cent and more may be taken overhead, requiring no additional treatment besides alkali or water-wash, and in some cases the addition of an inhibitor. The amount which may be taken overhead depends upon the color requirement. Where the gasoline is dyed and an inhibitor added considerably larger amounts may be removed with only a very light treatment such as alkali and/or water-wash.

Each of the gasolines was treated by agitating them with from 6 to 20 pounds of acid per barrel of distilling with fire and steam at a maximum temperature of 350° F. The results show that improved desulfurization is obtained for each of the three cracked distillates by the removal of approximately 30 per cent untreated fraction and acid treatment of only the heavier (70 per cent) fraction or bottoms. The gasoline from Sample A, with an original sulfur content of 0.32 per cent, showed a reduction to 0.22 when treated with 6 pounds of 23 per cent sulfuric acid. The 30 per cent overhead fraction contained 0.19 per cent sulfur. Acid treatment of the bottoms with 4 and 6 pounds of acid, respectively, and redistillation of the acid treated product with subsequent blending of the overhead untreated distillate and the distillate from the treated bottoms showed sulfur

42. U. S. Patents No. 1,827,537 and No. 2,009,118.

Table 13

Treatment of California Cracked Distillate at Varying Temperatures

Acid Conc. Per Cent	Lbs./ Bbl.	Temp. °F.	Soln. Loss	Polymers	Per Cent Sulfur in Finished Gasoline
93.24	30	100	7.3	6.3	0.15
93.24	30	70	5.6	5.3	0.14
93.24	30	40	5.4	3.0	0.15
98	22	100	6.3	6.3	0.14
98	22	70	5.4	5.2	0.14
98	22	40	5.4	3.3	0.14
98	22	0	5.9	1.6	0.12

Table 14

Treatment of Cracked Distillates with 98 Per Cent Sulfuric Acid at Varying Temperatures

Type of Cracked Gasoline	Temp. °F.	Lbs./ Bbl.	Per Cent Solution Loss	Per Cent Polymers	Per Cent Sulfur in Finished Gasoline
California D	100	30	8.1	9.7	0.13
(0.59% S	70	30	7.7	6.8	0.11
86.7% 410° F.E.P.	40	30	7.0	4.9	0.08
	18	30	7.5	1.7	0.08
	0	30	7.2	1.6	0.07

Table 12

Cracked Gasoline—(California Crude Oil)

Temperature, °F.		70						40						18						0					
Treatment		— Split	Caustic	—	Simple			— Split	Caustic	—	Simple			—Split	Caustic	—	Simple			—Split	Caustic	—	Simple		
	None						Acid						Acid						Acid						Acid
Quantity of Acid, Lbs.			5	10	20	30	10	5	10	20	30	10		5	10	20	30	10		5	10	20	30	10	
Concentration, %			93	93	98	93	93	93	93	98	93	93		93	93	98	93	93		93	93	98	93	93	
Losses, %																									
Solution			1.6	3.8	7.8	14.5	3.8	1.6	2.9	6.5	10.6	2.9		1.3	2.9	5.2	7.3	2.9		1.4	2.0	4.5	6.0	2.1	
Polymerization			1.5	3.3	8.0	8.9	3.2	1.4	2.3	6.3	8.1	2.3		1.0	1.8	3.2	3.9	1.8		1.0	2.4	3.2	4.5	2.3	
Distillation			1.2	1.0	0.8	0.6	1.0	0.8	0.8	0.8	0.8	0.8		1.0	0.9	0.9	0.8	0.8		0.8	0.7	0.8	0.7	0.8	
Total			4.3	8.1	16.6	24.0	8.0	3.8	6.0	13.6	19.5	6.0		3.3	5.6	9.3	12.0	5.5		3.2	5.1	8.5	11.2	5.2	
Gravity, °A.P.I. at 60° F.		59.2	59.8	59.9	58.5	60.1		60.4	60.3	59.8	59.5	60.3		60.7	61.0	60.0	60.0	60.2		60.4	60.3	60.1	59.9	60.3	
Color	Red	Yel.	28	30	28	28	30	24	30+	30+	28	30+		27	30+	30+	30+	30+		23	28	30+	30+	27	
Color Stability*			23	25	24	23	25	19	25	26	23	25		22	25	26	26	24		18	24	26	26	22	
Gums, Copper Dish, Mg./100 Cc.																									
Original Gasoline	42	52	2	2	4	3	1	3	1	1	6	1		2	2	3	1	2		5	2	2	3	3	
Original Gasoline +.025% Inhibitor	..	33	3	5	2	2	1	2	1	6	7	3		2	2	3	2	1		1	1	1	2	2	
Sulfur, %	.61	.61	.30	.18	.17	.13	.24	.40	.23	.13	.11	.29		.40	.32	.13	.11	.33		.38	.32	.17	.14	.34	
Reid Vapor Pressure, Lbs.	9.0	7.4										Below		5.0											
Octane No., Motor Method	71	70	71	71	69	69	70	70	71	70	69	70		71	71	70	70	70		70	70	70	70	70	
Oxygen Bomb Stability, Induction Period, Min.																									
Original Gasoline	300	145	120	145	225	150	3840	120	220	230	310	740		165	250	360	270	315		125	190	230	290	150	
Original Gasoline + .025% Inhibitor	..	175	390	1165	Cut 2300	2100	3840	280	895	2330	Cut 2400	1460		360	640	1320	1300	740		300	535	995	1120	500	
Doctor			Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.		Neg.	Neg.	Neg.	Neg.	Neg.		Neg.	Neg.	Neg.	Neg.	Neg.	
% Plumbite Used		3	3	3	Sweet		3	3	3	Sweet		3		3	3	3	Sweet	3		3	3	3	Sweet	3	
Concentration, °Be.		30	8	8	Off Still		8	8	8	Off Still		8		16	16	8	Off Still	16		16	16	8	Off Still	16	
100 Cc. A.S.T.M. Distillations																									
I.B.P., °F.		100	112	109	124	122	113	110	110	118	126	108		107	107	113	120	108		108	105	112	115	112	
50%		236	237	240	254	254	248	235	236	247	250	240		234	233	242	240	237		236	236	240	241	236	
90		355	316	310	340	338	324	314	314	332	330	326		316	312	322	320	326		320	319	324	324	324	
E.P., °F.		401	380	380	385	386	384	380	380	390	392	386		380	380	386	384	384		380	382	386	387	382	

*Equivalent to two hours noon June sunlight.

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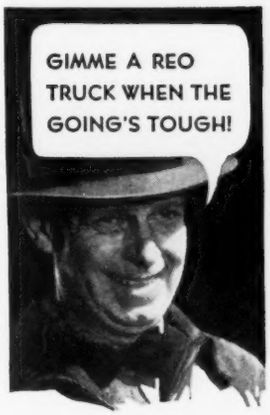

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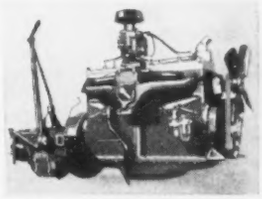

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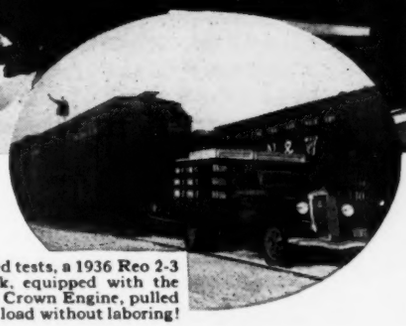

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The results of partial treatment of California cracked gasoline are shown in Table 15.

Table 15

California Cracked Gasolines

	Untreated	Acid Treated		30% Overhead Untreated Acid Treatment of Bottoms	
Gasoline A					
Acid, Lbs./Bbl. Bottoms	....	....	....	4	6
Acids, Lbs./Bbl. Raw Gaso.	None	....	6	2.8	4.2
Sulfur, in Overhead, Frac. %	0.19	....	....	....	....
Gravity °A.P.I.	57.2	....	56.4	57.7	57.6
Color °Saybolt	....	....	20	20	25
Color Stability*	....	....	19	18	22
Gum, Mgs./100 cc Copper Dish	....	....	22	43	17
Sulfur, % in total blend	0.32	....	0.22	0.26	0.19
Gasoline B					
Acid, Lbs./Bbl. Bottoms	....	....	....	8	16
Acid, Lbs./Bbl. Raw Gaso.	None	8	16	5.6	11.2
Sulfur in Overhead, Frac. %	0.19	....	....	....	....
Gravity °A.P.I.	55.1	56.1	56.1	56.4	56.6
Color °Saybolt	....	27	30+	30+	27
Color Stability*	....	24	29	27	27
Gum, Mgs./100 cc Copper Dish	....	35	60	169	178
Sulfur, % in total blend	0.62	0.43	0.25	0.40	0.24
Gasoline C					
Acid, Lbs./Bbl. Bottoms	....	....	....	10	20
Acid, Lbs./Bbl. Raw Gaso.	None	10	20	7.0	14.0
Sulfur in Overhead, Frac. %	0.35	....	....	....	....
Gravity °A.P.I.	49.8	51.4	50.8	51.5	51.5
Color °Saybolt	....	30+	27	30	28
Color Stability*	....	30+	24	27	27
Gum, Mgs./100 cc Copper Dish	....	29	6	34	6
Sulfur, % in total blend	0.67	0.36	0.22	0.35	0.28

*Equivalent to two hours noon June sunlight.

contents of 0.26 and 0.19 per cent, respectively. The quantities of acid used per barrel calculated back to the original gasoline are 2.8 and 4.2 pounds. Thus, a better desulfurization is obtained upon the total gasoline with 4.2 pounds of acid (treating the bottoms and blending the distillate therefrom with the untreated overhead) than with 6 pounds upon the original gasoline, and the color and color stability are also improved. Similar results are shown with the other two gasolines B and C. For example, in the case of gasoline B equivalent desulfurization was obtained with 11.2 pounds of acid per barrel by treating the bottoms and blending the distillate therefrom with the 30 per cent untreated overhead as by the treatment of the total gasoline with 16 pounds of acid. In the case of C, however, the sulfur content of the untreated overhead fraction is 0.35 per cent, so that no saving in acid may be shown when the sulfur content of the final blend is brought to a point below this value.

In another series of tests 14.7 A.P.I. gravity charging stock from Naranjos crude oil was cracked yielding 36.3 per cent of gasoline and 60.3 per cent of fuel oil residuum. This gasoline

Table 16

Type of Gasoline Produced Treatment	400°F. End Point —Split Plumbite— 93% Acid	30% Overhead Untreated, 70% Bottoms, 30 Lbs./Bbl. Acid
Acid, Lbs./Bbl.	30	21
Treating Losses		
Acid Solution Loss, %	7.2	4.9
Polymerization Loss, %	6.3	4.4
Distillation Loss, %	1.2	1.5
Total Loss, %	14.7	10.8
Estimated Total Loss for 10 Lb. Vapor Pressure, %	14.2	10.1
Yields		
Finished Cracked Gasoline, % Raw Gasoline	85.8	89.9
Raw Gasoline, % Charging Stock	36.3	36.3
Finished Cracked Gasoline, % Charging Stock	31.1	32.6
Analysis of Treated Products		
Gravity, °A.P.I.	55.9	60.1
Color °Saybolt	27	30
Color Stability*	27	25
Doctor Test	Neg.	Neg.
Gum, Mgs./100 cc. (Copper Dish)		
Without Inhibitor	8	3
With Inhibitor (0.025%)	4	2
Sulfur, %	0.14	0.12
Oxygen Bomb Stab.—Induction Period, Min.		
Without Inhibitor	170	50
With Inhibitor (0.025%)	660	615
Octane Number		
Research Method	63	65
Motor Method	58	59

*Equivalent to Two Hours Noon June Sunlight.

was subjected to sulfuric acid treatment using the split plumbite method with the following results. Employing 30 pounds of 93 per cent acid per barrel upon the whole 400 end-point gasoline and 30 pounds per barrel after removing 30 per cent which was untreated with the exception of a simple wash. The advantages of distilling off a portion of the gasoline without treatment are clearly demonstrated by the results shown in Table 16.

A series of tests were made upon cracked gasoline from Santa Fe crude oil. The 400 end-point cracked gasoline was first treated by the split caustic method using 4, 7 and 10 pounds of 93 per cent sulfuric acid and treating with caustic soda solution before and after the acid treatment. The treated gasoline was rerun with fire and steam with an upper still temperature of 350° F. in the liquid and then sweetened with sodium plumbite. The results of these treatments before and after sweetening are shown in Table 17.

Further treats were made upon the cracked gasoline by the following methods:

1—*Overhead Treat* — (50% O.H., 50% Bottoms—6 Lbs. Acid Sweetened).

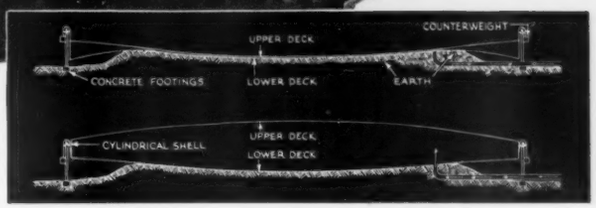
The raw gasoline was distilled to remove overhead a 50 per cent light cut which was not treated. The bottoms were acid treated by agitating with 6 pounds of 93 per cent sulfuric acid per barrel, neutralized with a caustic soda wash, and rerun with fire and steam, limiting the still temperature to 350°F. The overhead cut and treated bottoms were blended, sweetened with 3 per cent of 16° Baume sodium plumbite, and the properties determined.

2—*Overhead Treat* — (45% O. H. — 1 Lb. Acid, 55% Bottoms — 5 Lb. Acid, Sweetened).

The raw gasoline was distilled to remove overhead a 45 per cent light cut which was acid treated using 1 pound of acid per barrel and neutralized. The 55 per cent bottoms was acid treated using 5 pounds of acid per barrel and neutralized. The two treated products were blended, rerun, and sweetened as in the previous treat.

The results of these treats,

The WIGGINS BALLOON



The Wiggins Balloon illustrated above is connected to two 80,000 and two 55,000 Bbl. tanks and has a 250,000 cu. ft. capacity. The diagrams show the shape taken by the Balloon when empty and when expanded.

A New Unit

in our line of

EVAPORATION SAVING EQUIPMENT

TRIED . . . tested . . . *and found practical*, the WIGGINS BALLOON now takes its place in our line of specially designed evaporation prevention equipment which includes the well-known Wiggins Pontoon Roof, Wiggins Breather Roof, Hortonsphere, and Hortonspheroid.

WHAT? The Wiggins Balloon is a steel tank of flexible construction embodying the principles of the Wiggins Breather Roof. It is designed to serve as a low pressure, large capacity container affording temporary storage for volatile vapor from one or more sources. The Balloon is connected to the sources by means of special piping and the vapor is free to flow in or out to accommodate variations in volume at the source (working tanks, storage tanks, etc.).

WHY? Because of the remarkably broad field of application and low unit cost of installation, Wiggins Balloons open up new fields for evaporation savings in marketing branches of the industry where the first cost of prevention equipment has previously seemed high when compared to quantity of oil products protected. Installations entail no operating costs, and quickly pay for themselves.

WHERE? Wiggins Balloons can be installed wherever volatile oil products are handled or stored in gas-tight tanks as at bulk stations, filling stations, marine terminals, refineries, tank farms, etc. One Balloon can serve one . . . two . . . or more tanks and the system can include oil products of different grades.

HOW? Let us give you complete details on operation and estimated savings. Wiggins Balloons have been built in capacities ranging from 2,500 up to 350,000 cu. ft. and larger sizes are practical. Where space is limited, mounting the Balloon on one of your present storage tanks will often solve the problem.

CHICAGO BRIDGE & IRON WORKS

Plants at BIRMINGHAM, CHICAGO and GREENVILLE, PA.

Cleveland	2206 Rockefeller Bldg.	Philadelphia	1614-1700 Walnut St. Bldg.	Dallas	1439 Dallas Athletic Club
Houston	2919 Main Street	Chicago	2125 Old Colony Bldg.	San Francisco	1060 Rialto Bldg.
Tulsa	1607 Thompson Bldg.	Detroit	1513 Lafayette Bldg.	Los Angeles	1422 Wm. Fox Bldg.
New York	3345-165 Broadway Bldg.	Birmingham	1534 North 50th Street	Havana	402 Edificia Abreu

with the properties of the untreated blend, are shown in Table 18.

In the extensive investigation on the effect of sulfuric acid in the treatment of cracked distillates by Morrell and Egloff (43) referred to, the following summary and conclusions were drawn, which practically shows all of the factors involved in this treatment:

1. In the treatment of cracked distillates, the acid sludge-acid ratio, or the relative volume of acid sludge formed to sulfuric acid used, increases practically as a straight-line function of the temperature.

2. The acid sludge-acid ratio increases with increase in sulfuric acid concentration.

3. The acid sludge-acid ratio decreases somewhat with increasing amounts of sulfuric acid of constant concentration between temperatures of 5° F. and 100° F.

4. Many cracked distillates show an increase in sulfur content with increase in boiling point to a maximum, after which the sulfur content decreases.

5. Increase in concentration of acid increases solution loss and polymerization.

6. Reduction of solution loss is appreciable with reduction in temperature, but is substantially less than the decrease in polymerization.

7. Polymerization is a function of all three variables, quantity and concentration of acid and temperature. The decrease in polymerization with decrease in temperature is very marked.

8. In general, treatment of cracked distillates at low temperatures shows a substantial saving in losses of distillate, particularly in respect to polymerization or conversion of gasoline into high boiling components.

9. The degree of desulfurization increases with increase in concentration of acid.

10. Sulfuric acid of 98 per cent concentration is recommended for refractory distillates requiring drastic treatment for desulfurization. A saving in quantity of acid and cost will result.

11. Desulfurization depends to a great extent on the character of sulfur compounds, both in respect to the type of distillate and the particular fraction of the same distillate treated.

12. The degree of desulfurization is in general increased by pre-treatment of the distillate with caustic or plumbite solutions before acid treatment.

13. Treatment of cracked gasoline with sulfuric acid in general reduces the octane number.

14. The gum content of cracked gasoline decreases with increasing amounts of sulfuric acid of constant concentration and also with increasing concentrations of acid.

15. The color of cracked gasoline improves with increase in amount of sulfuric acid, usually to a maximum, and then may drop off when it is over-treated. The color also improves within limits with constant amounts of acid of increasing concentration.

Aside from the exceptions noted cracked distillates are usually redistilled in the presence of steam after acid treatment. The precautions to be taken during distillation have been pointed out by Morrell (44).

Table 17

Treatment	None	Sweetened	—Split Caustic—		
Acid, Lbs./Bbl.	None	None	4	7	10
Finished Cracked Gasoline—					
% Raw Gasoline	....	....	98.6	97.2	95.9
Analyses of Treated Products					
Gravity, °A.P.I.	58.8	....	61.1	61.1	61.1
Color °Saybolt	Red	Red	22	25	29
Color Stability*	....	....	18	19	21
Doctor Test	Pos.	Neg.	Neg.	Neg.	Neg.
Gum. Mgs./100 cc. (Copper Dish)					
Without Inhibitor	196	167	7	8	4
With .25% Universal Inhibitor	199	180	7	7	2
Sulfur, %	0.63	0.62	0.40	0.37	0.29
Oxygen Bomb Stab., Induction Period, Minutes—					
Without Inhibitor	440	175	85	85	125
With 0.025% Universal Inhib.	490	240	230	260	420
Octane No.—Motor	72	....	71	70	....

*Color. °Saybolt after exposure equivalent to two hours noon June sunlight.

Table 18

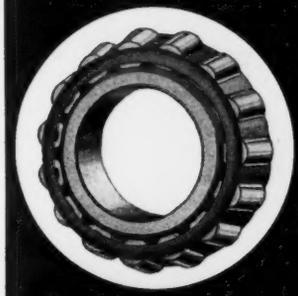
Treatment—Type	Untreated	—Overhead—	
Treatment Number	....	1	2
Overhead			
% by Volume of Raw Overhead	....	50	45
Acid, Lbs./Bbl.	....	None	1
Bottoms			
% by Volume of Raw Bottoms	....	50	55
Acid. Lbs./Bbl.	....	6	5
Overall			
Acid, Lbs./Bbl.	....	3	3.2
Sodium Plumbite Sweetened			
Finished Cracked Gasoline			
% Raw Gasoline	100.0	97.7	97.0
Analyses of Treated Products			
Gravity, °A.P.I.	60.6	60.8	62.3
Color °Saybolt	Red	24	26
Color Stability*	....	19	18
Odor	....	Good	....
Doctor Test	Pos.	Neg.	Neg.
Gum, Mgs./100 cc. (Copper Dish)			
Without Inhibitor	....	6	8
With 0.025% Universal Inhibitor	....	....	11
Apparent Sulfur, %	....	....	....
True Sulfur, %	0.56	0.44	0.38
Chlorine, %	....	....	....
Oxygen Bomb Stability, Induction		1	2
Period, Minutes—			
Without Inhibitor	....	....	60
With 0.025% Universal Inhibitor	....	285	135
Octane No.—Motor	72	71	71

*Color °Saybolt after exposure equivalent to two hours noon June sunlight.

43. World Pet. Congress (loc. cit.).
44. J.I.E.C. Vol. 18 pp. 733-8 (1926).

(*Continued on page* 69)

TIMKEN ROLLER BEARINGS



Special Timken Tapered Roller Bearings provide for adjustment on all the main bearings if ever necessary. Insures longer service life and smoother operation. Shaves down usual friction loss.

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Exclusive Quincy feature. These rods are light in weight. They possess the strength of steel, require less power, eliminate vibration and increase operating efficiency.

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These Perfect Circle Piston Rings developed for exclusive use with Quincy's semi-steel, light weight pistons. Both oil and compression rings unusually efficient.

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This copper finned intercooler located in air blast from fan pulley maintains low temperatures of discharge air on all 2-stage Quincys. Thus, efficiency is greatly stepped up.

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Completely unloads compressor whenever it stops and keeps unloaded until motor reaches full speed on start. Safeguards against burned out motors and belts. Unloader bleeds both cylinders and also intercooler on 2-stage models.

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MORE air from a given amount of power. Trouble-free compressor operation. Longer compressor service life. These 3 desirable objectives are the result of deliberate engineering—Quincy engineering. They are the result of developing and adopting the better, higher quality parts illustrated at the left. Study this list carefully. Then fill in and mail the coupon below for interesting literature on Quincy Compressors—the ones that will cut air costs in your stations.

Especially designed for service station duty is this 2-stage Quincy. Note fan-type pulley, vertical radiation fins and intercooler, all of which combine to discharge cooler air and reduce power consumption.

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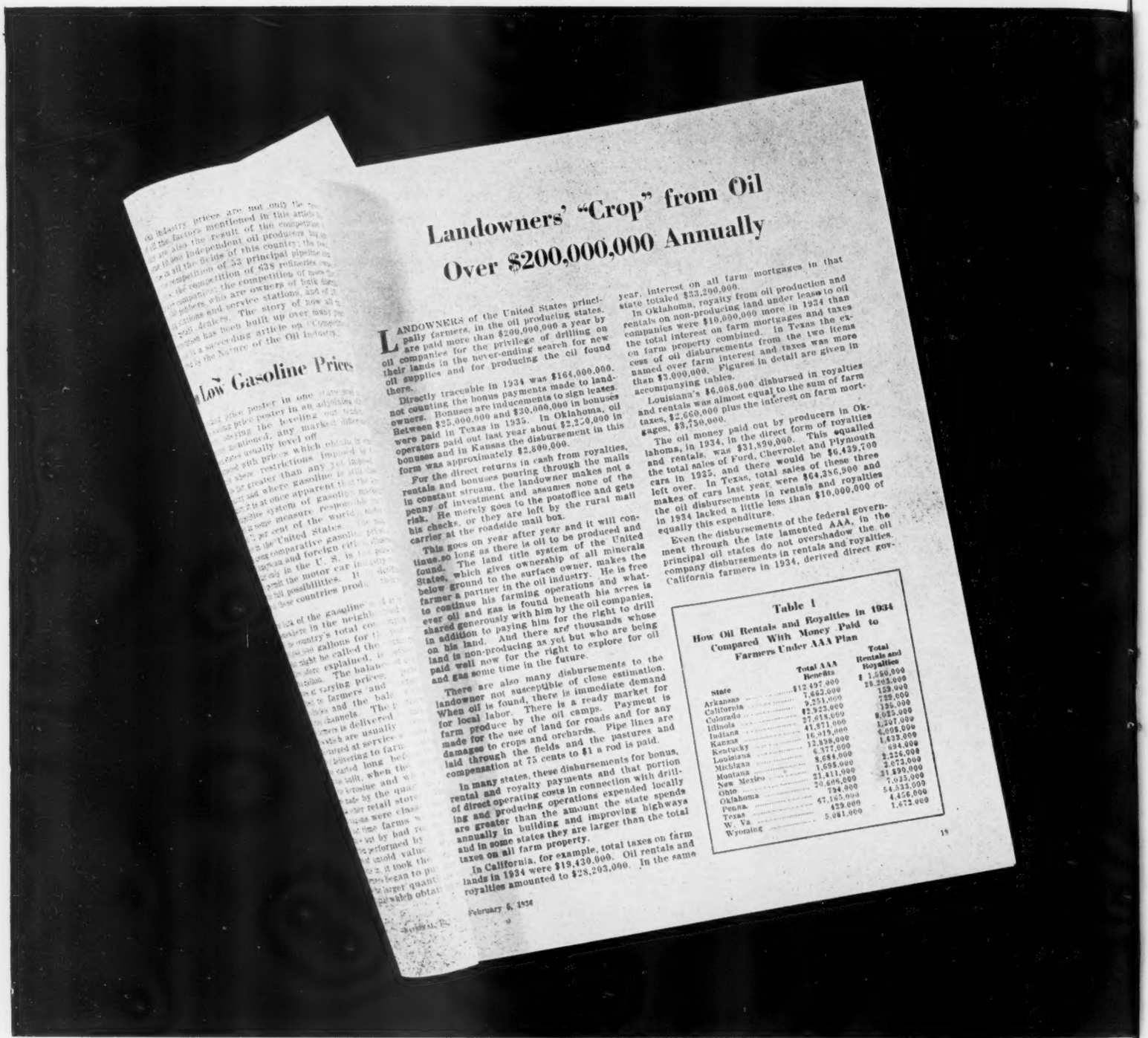


Landowners' "Crop" from Oil Over $200,000,000 Annually

LANDOWNERS of the United States principally farmers, in the oil producing states, are paid more than $200,000,000 a year by oil companies for the privilege of drilling on their lands in the never-ending search for new oil supplies and for producing the oil found there.

Directly traceable in 1934 was $164,000,000, not counting the bonus payments made to landowners. Bonuses are inducements to sign leases. Between $25,000,000 and $30,000,000 in bonuses were paid in Texas in 1935. In Oklahoma, oil operators paid out last year about $2,250,000 in bonuses and in Kansas the disbursement in this form was approximately $2,800,000.

For the direct returns in cash from royalties, rentals and bonuses pouring through the mails in constant stream, the landowner makes not a penny of investment and assumes none of the risk. He merely goes to the postoffice and gets his checks, or they are left by the rural mail carrier at the roadside mail box.

This goes on year after year and it will continue so long as there is oil to be produced and found. The land title system of the United States, which gives ownership of all minerals below ground to the surface owner, makes the farmer a partner in the oil industry. He is free to continue his farming operations and whatever oil and gas is found beneath his acres is shared generously with him by the oil companies, in addition to paying him for the right to drill on his land. And there are thousands whose land is non-producing as yet but who are being paid well now for the right to explore for oil and gas some time in the future.

There are also many disbursements to the landowner not susceptible of close estimation. When oil is found, there is immediate demand for local labor. There is a ready market for farm produce by the oil camps. Payment is made for the use of land for roads and for any damages to crops and orchards. Pipe lines are laid through the fields and the pastures and compensation at 75 cents to $1 a rod is paid.

In many states, these disbursements for bonus, rental and royalty payments and that portion of direct operating costs in connection with drilling and producing operations expended locally are greater than the amount the state spends annually in building and improving highways and in some states they are larger than the total taxes on all farm property.

In California, for example, total taxes on farm lands in 1934 were $19,430,000. Oil rentals and royalties amounted to $28,203,000. In the same year, interest on all farm mortgages in that state totaled $23,290,000.

In Oklahoma, royalty from oil production and rentals on non-producing land under lease to oil companies were $10,000,000 more in 1934 than the total interest on farm mortgages and taxes on farm property combined. In Texas the excess of oil disbursements from the two items named over farm interest and taxes was more than $3,000,000. Figures in detail are given in accompanying tables.

Louisiana's $6,008,000 disbursed in royalties and rentals was almost equal to the sum of farm taxes, $2,660,000 plus the interest on farm mortgages, $3,750,000.

The oil money paid out by producers in Oklahoma, in 1934, in the direct form of royalties and rentals, was $31,899,000. This equalled the total sales of Ford, Chevrolet and Plymouth cars in 1935, and there would be $6,439,700 left over. In Texas, total sales of these three makes of cars last year were $64,286,900 and the oil disbursements in rentals and royalties in 1934 lacked a little less than $16,000,000 of equally this expenditure.

Even the disbursements of the federal government through the late lamented AAA, in the principal oil states do not overshadow the oil company disbursements in rentals and royalties. California farmers in 1934, derived direct gov-

Table I

How Oil Rentals and Royalties in 1934 Compared With Money Paid to Farmers Under AAA Plan

State	Total AAA Benefits	Total Rentals and Royalties
Arkansas	$12,497,000	$ 1,550,000
California	7,663,000	28,203,000
Colorado	9,251,000	159,000
Illinois	42,923,000	729,000
Indiana	27,618,000	126,000
Kansas	41,971,000	8,025,000
Kentucky	16,919,000	1,307,000
Louisiana	12,898,000	6,008,000
Michigan	8,377,000	694,000
Montana	8,684,000	2,254,000
New Mexico	12,411,000	2,672,000
Ohio	1,695,000	31,890,000
Oklahoma	20,686,000	7,035,000
Penna.	794,000	54,533,000
Texas	57,165,000	4,456,000
W. Va.	479,000	1,672,000
Wyoming	5,081,000	

February 6, 1936

Eight-page booklet giving striking facts and comparisons on what the oil industry means to the farmers of this country, as presented for the first time in the Public Educational Number of NATIONAL PETROLEUM NEWS; available to oil companies at the following prices, including postage:

100 copies.....$17 500 copies.....$26 1000 copies.....$35 5000 copies.....$95

Address all orders to National Petroleum News, 1213 West Third St., Cleveland.

The Story of What Oil Means to the Farmer—And How Oil Companies Can Use It

THE first detailed facts showing the great sums of money the oil industry pays each year to farmers of this country on whose lands it drills for oil, were made public in the article in the Public Educational Number of NATIONAL PETROLEUM NEWS entitled, "Landowners' 'Crop' From Oil over $200,000,000 Annually". A reproduction of the introductory portion of this article is on the accompanying page.

This special article and other charts and tables in that issue brought out clearly the various ways in which the landowner farmer benefits from his partnership in the oil industry's producing operations—a partnership in which the landowner risks nothing but is paid whether or not oil is found on his land.

The oil company payments to landowners through royalties, rentals and bonuses are compared, by states, with the AAA benefits there; with the amount of farm taxes; with interest charges on farm mortgages; with income from farm crops; with expenditures on highways—to bring home to the farmer the importance of the oil industry's contribution to his comfort and welfare.

A knowledge and realization of these facts will tend to give many thousands of farmers, in other states as well as those producing oil, a better appreciation of the contribution of the oil industry on their behalf. It will cause some of them at least to give more than passing thought to proposals to add to the industry's tax burden and to fasten upon it arbitrary regulations which would make it impossible for oil companies to carry on their producing operations and continue to contribute in the same degree to landowner's income.

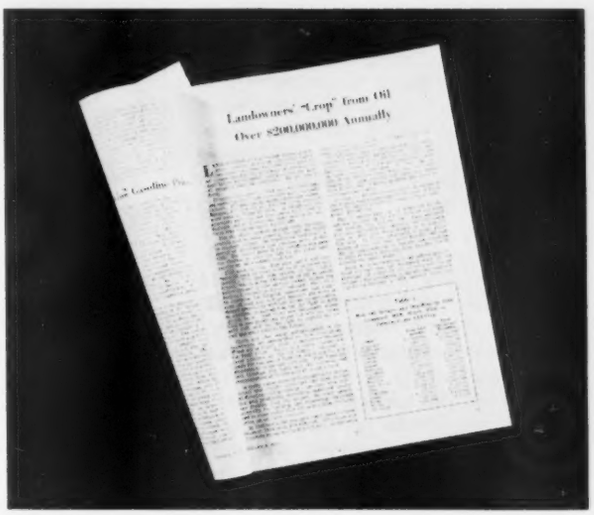
The royalty or rental or bonus payment to the individual landowner is welcome indeed; but it carries with it no intimation of the total sums that are being sent by oil companies in the many thousands of such checks they send out regularly.

Oil companies can very advantageously use reprints of the article on "Landowners' 'Crop' from Oil Over $200,000,000 Annually," including also the article on "When Oil Companies Move In", from page 253 of the Public Educational Issue in the following ways:

1. Enclose reprints with royalty, rental and bonus checks as they are mailed out.
2. Marketing companies in farming territories should send the reprints out to their customers, particularly the farmer co-operative oil companies—whether in oil producing states or not. This story should be told to farmers of the country generally in the interest of the oil industry's public relations.
3. Reprints should be put in the hands of all oil producing company workers, with the suggestion that they have their neighbors read them.

You can secure reprints of any of these articles at the prices given on the opposite page. A small investment that will pay you big dividends!

Address all orders to NATIONAL PETROLEUM NEWS, 1213 West 3rd Street, Cleveland, Ohio.



• MARKETS •

CLEVELAND, March 16

WITH buyers showing relatively little interest in gasoline the second week of March, kerosine took the market spotlight as distributors prepared for the annual spring demand from the farm trade.

As a result of the cold spell, offerings of kerosine have been considerably smaller than usual for the season. Several refiners, usually sellers, have been on the buying side of the market. While few refiners would go so far as to predict a shortage of kerosine, many expressed the opinion that it would be difficult to obtain at some points.

Some buyers were investigating the possibility of getting kerosine from the Rodessa field. Offerings from that district, however, were insufficient to make up for the lack of offerings in other districts.

Mid-Continent refiners were already experiencing a fairly good demand from the extreme southwest. Prices worked 0.125 cent higher. Demand is expected to increase steadily as the weather becomes more favorable farther north. Mid-Continent refiners will have little, if any, chance to build up their storage. Even refiners in the north may not be able to build up sufficient storage to meet expected demand.

In the middle western market, suppliers were already advancing their spot kerosine prices as several refiners withdrew from the market upon finding they would have only enough kerosine to supply their regular customers.

On the other hand kerosine prices along the eastern seaboard were none too steady. For the most part prices were unchanged, although the trend continued downward. Some traders believed that this trend would be broken shortly, however. Some of the Pennsylvania refiners who supply Ohio and Indiana markets were quoting higher prices. Refiners around Bradford and Warren, however, mostly supply kerosine in markets competitive with material from the eastern seaboard and did not change their quotation.

Although taking second place in market importance last week, gasoline movement was fairly active, about normal for the season. Gasoline inventories increased again in the week ended March 7 despite a fairly substantial cut in crude runs.

It is believed that at least part of the steady increase in gasoline stocks since the beginning of the cold spell has been due to the inability of some of the larger companies to get gasoline from refineries to their bulk plants. If, as is believed in some quarters, movement to bulk plants will be freer from now on, stocks as reported to the American Petroleum Institute likely will turn downward shortly.

Despite the fact that stocks are now far above the levels recommended by the Institute and the Bureau of Mines, they do not appear to be burdensome. Some refiners were talking higher prices last week. Apparently the aim of most refiners is to re-establish their gasoline prices at the levels attained following the crude advance early in January.

Gasoline was slightly better in the middle western market. Offerings of low octane generally were made at 4.875 cents. Higher octane grades were bringing 5.75 cents. Most of the material offered at below these prices was not up to specifications meeting general trade acceptance.

Despite the unsettled retail markets along the eastern seaboard, wholesale gasoline prices remained firm. This was largely a reflection of the good position of gasoline at the Gulf. Suppliers along the seaboard could not purchase gasoline at the Gulf and bring it around to the eastern seaboard at present tanker rates and still make a profit with seaboard prices at current levels.

This put some of the independent suppliers "on the spot," as their jobbers were not able to meet the lower retail prices being posted at some points.

Retail prices were down at Boston. Some stations there were selling 8 gallons for $1, tax included. Most major company stations were posting 16 cents, tax included. Prices were somewhat improved at Brooklyn where dealers were getting wide margins.

Pennsylvania neutral oils were cut 1 cent by several refiners. Stocks have been increasing steadily as a result of slack demand with no compensating reduction in production. Mid-Continent neutrals were unchanged.

Motor oil business was none too brisk during the week. Apparently spring buying has been delayed by the cold weather. Floods in some sections have curtailed consumption. Traders were looking for a resumption of motor oil buying within the next two or three weeks.

The wax market was unchanged. Offerings still were restricted, and buyers were still willing to pay asked prices for any material that appeared in the market.

N. P. N. Gasoline Index

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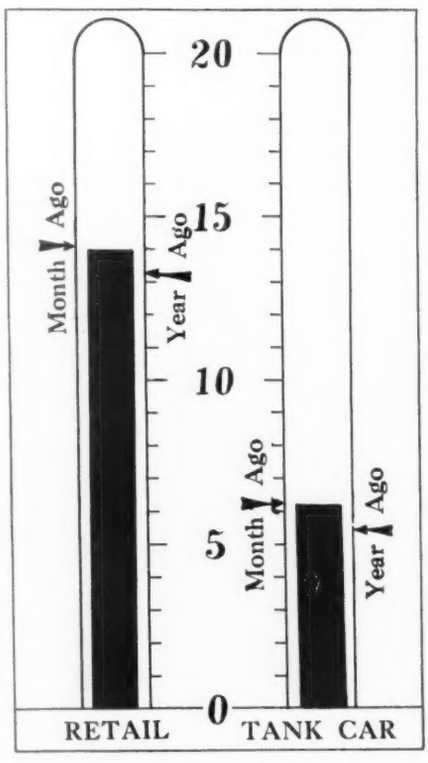


Retail index is an average of 50 cities, ex-tax, and tank car is a weighted average of 13 wholesale markets for middle octane gasoline. The gasoline price index this week represents the following price in cents per gallon:

	Retail	Tank Car
March 16	13.97	6.19
Month ago	14.12	6.24
Year ago	13.20	5.51

California

Higher Prices Expected

LOS ANGELES, March 13

DEVELOPMENTS the past week were confidently expected to result in substantial advances in wholesale and retail gasoline prices throughout Pacific Coast territory in the near future. Operators here believe advances would be fully justified by recent increases in California crude oil quotations and the chief reason for not putting them in effect immediately was believed to be the failure of independent refiners and secondary companies to maintain their own posted prices in competitive areas.

A secondary cause of delay in advancing gasoline quotations was the presence of large quantities of surplus gasoline in the hands of independent refiners and distributors, who were willing to sell only on the basis of the anticipated higher price levels. This difficulty, however, was not considered as serious as it was earlier in the year, because of the end of the winter season and the early resumption of tourist motoring on a large scale.

Tank wagon quotations on competitive brands of gasoline, delivered to points in the Los Angeles Basin, ranged from 8.25 to 8.5 cents a gallon, inclusive of 4 cents tax. This was an advance of more than 0.25 cent a gallon from the average price last week when one company was reported to have bought 250,000 gallons of 400 e. p. gasoline at a net price of 4 cents a gallon.

On major company third-grade brands of gasoline, tank wagon deliveries in the Basin area were nominally quoted at 9.5 cents a gallon, inclusive of tax, and less 1 cent discount to exclusive accounts. These prices were generally maintained by parent companies, although their subsidiaries were reported to have granted rebates of from 0.5 to 0.75 cent a gallon to outlets in competitive areas.

Fuel oil prices were fractionally higher at both the Los Angeles Basin and San Joaquin Valley independent refineries, the range being from 65 to 70 cents a barrel, with little offered at the lower level. Major company products remained unchanged. In contrast to this, independent diesel and gas oil quotations were somewhat lower, the range being from $1.00 to $1.05 a barrel, a loss of about 5 cents a barrel.

Pacific Coast export markets were without special feature, kerosine-distillate being the only product that showed any improvement in demand. Suppliers were reported to be unwilling to accept offers of $1.09 per barrel for kerosine distillate stock, in cargo lots and little spot business developed.

Advances in tanker rates were a bar to spot shipments af gasoline to the Atlantic seaboard, even if suppliers were willing to meet the views of buyers as to the price basis.

Coastal

Bunker Oil Active

NEW YORK, March 14

INCREASED activity and higher prices in the cargo market for Bunker C fuel oil were highlights in the Gulf Coast bulk market during the week ended March 14.

Two sales of bunker oil were reported for domestic shipment from the Gulf during March. One sale made March 11, was for a full cargo of Grade C oil at $0.79 a barrel. The other was for a part cargo of approximately 35,000 barrels of Grade C at $0.80 a barrel, which was closed early in the week.

While suppliers' opinions of this market varied somewhat as to prices, all reported that little material now was available for prompt shipment, and that probably none was available for domestic lifting at under $0.79 a barrel. No export inquiries for this product were reported in the market at present, but suppliers indicated they would ask higher than the domestic market if they quoted on any foreign business.

Cargo gasoline markets at the Gulf, particularly for the higher octane grades for domestic shipment, were reported steady despite the increase in stocks which has taken place the past month or so. Suppliers generally reported they were not pressed for business and would not sell at under the prices which have prevailed for several weeks.

Export gasoline markets continued dull, with no foreign inquiries reported. Suppliers said they understood the Roumanian market still was about 0.5 to 0.625 cent under the American Gulf and they were not willing to meet this competition.

Kerosine remained quiet with no domestic or foreign inquiries reported. Material was reported freely available at unchanged prices.

Virginia Oil Men to Convene

RICHMOND, March 17.—The annual meeting of the Virginia Oil Men's Association will be held at the Patrick Henry Hotel, Roanoke, Va., on May 21, according to A. L. Tenser, secretary-treasurer. There will be an election of officers and other important matters to come before the meeting.

Pennsylvania

Neutral Prices Down 1 Cent

CLEVELAND, March 14

THE recent easy position of neutral oils, created largely by lack of demand, resulted in lower prices being quoted by several sellers in the Pennsylvania market the second week of March. Other products showed comparatively little change from the previous week, although bright stock improved slightly.

Neutral inventories have increased steadily since the first of the year, according to reports. Despite the trend toward lighter oils, jobbers apparently have not been taking out neutrals in the expected volume. At the same time production of neutrals has been held up due to the good demand for wax.

Spring buying of motor oils generally has not gotten under way, apparently having been delayed by the unusually cold weather. In an effort to stimulate buying, several sellers reduced their asking prices for neutral oil. Several sales were made at the lower levels.

The larger companies were still acquiring what bright stock was available at around the general market. Sellers, however, were not offering as much material as they had previously. Apparently there was a general feeling that prices would go higher when spring buying gets under way.

Gasoline showed little change. Inventories remained in good shape at most plants, but at others gasoline was freely available. Refiners whose inventories were in good shape were anxious to get higher prices, but sellers in need of orders were fairly well satisfied to get 5.625 cents for U. S. Motor and 7.25 cents for 65 octane. Comparatively little price shading was reported.

Demand for kerosine was steady. Most reports indicated that demand was equal to current production, with little opportunity to build up storage. Refiners in the lower field have found a wider marketing territory since higher prices were established in the Mid-Continent. On the other hand the easier market along the eastern market was a threat to the market now being supplied by refiners in the Bradford-Warren district. Bradford-Warren refiners, however, still had no trouble in disposing of their output.

Fuel oil remained in good shape. Steel mills and other industrial plants were absorbing all the additional supplies offered as a result of the let-up in domestic demand.

Wax continued steady to higher. Offerings were scarce, and buyers were paying asked prices for what little material was available.

Chicago

Trading Quiet

CHICAGO, March 14

TRADING was comparatively quiet in the Mid-Western tank car market the second week of March. Gasoline prices showed little change and kerosine was tending higher.

Although kerosine was only moderately active, it was by far the tightest product in the list. The 41-43 w.w. kerosine was available throughout the week at a minimum of 4 cents, although offerings at that figure were becoming scarcer, and traders expected still higher prices in the near future. In fact, several began asking 4.125 cents late this week, and appeared none too anxious for business at that price.

One supplier reported he had an inquiry from a refiner for kerosine for delivery over the balance of March. Price offered was 4.25 cents for 41-43. Several other refiners were reported on the buying side of the kerosine market. Others were restricting open market sales and holding production for contract accounts.

The week ended March 14 found the gasoline market in slightly better position. Extremely low priced offerings either were absorbed or withdrawn and jobber buying was slightly better. As yet, however, buying has been only spotty. As expressed by several traders, any change in gasoline demand would have to be an improvement after the extremely inactive period during the cold weather.

Gasoline sold last week generally at a minimum of 4.875 cents for low octane, with good grades of 63-70 octane bringing upwards of 5.75 cents.

Some low octane U. S. Motor, presumably made from Rodessa crude, was offered through Chicago sellers last week. However, the low antiknock value of this gasoline made it almost impossible to find takers. These occasional offerings were shading prices for acceptable third-grade gasoline by 0.25 cent in some instances.

Cracked off-color gasoline of 65 octane or better also tended to unsettle the market picture for good grades of regular-grade gasoline last week. Several sellers reported that the preformed and potential gum content of this gasoline was high, and for that reason prices asked were anywhere from 0.125 to 0.5 cent below prices for good grades.

All in all, with gasoline stocks mounting, and sales still relatively light, resellers assumed an attitude of watchful waiting. And while occasional offerings of full specification gasoline were reported shading general market levels, refiners for the most part were not forcing the market. Lower prices, they indicated, were bringing no appreciable increase in orders, and they were content to wait until large scale buying would cause the market to assume a more discernible trend.

Eastern

Gasoline Quiet

NEW YORK, March 14

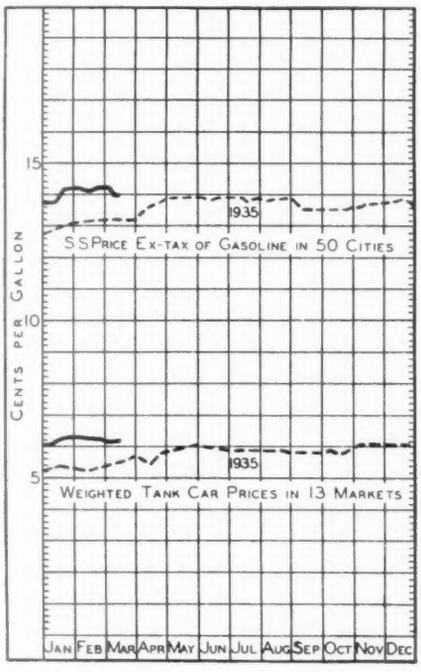
TANK car and barge gasoline markets were quiet along the eastern seaboard during the week ended March 14, with terminal prices unchanged. Retail gasoline markets were unsettled in some areas.

Little change was apparent in the general eastern market picture. Suppliers continued to hold tank car prices for 65 octane and above gasoline at a minimum of 7 cents at southern seaboard terminals and 7.25 cents in the northern areas, despite the disturbances in retail markets prevailing at many points.

Independent suppliers said their stocks particularly of the higher octane grades of gasoline, remained low and that they were unable to buy at the Gulf at a price low enough to make it profitable to fill their tanks. Several reported they were losing business as their jobbers were, in some cases, unable to meet the low retail price competition encountered and consequently were cutting down on their tank car and barge purchases.

Reports from Brooklyn were that the price situation was improving there and might be cleared up over the week-end, but low-price selling continued at many stations as the week ended. Another point where considerable uncertainty prevailed in the retail gasoline market was Boston. Some stations there were reported selling 8 gallons for $1.00, tax included, compared to the regular retail price of 16 cents, including 4 cents taxes.

Kerosine was reported in fair demand, but supplies on hand appeared to be burdensome in some quarters and the price trend continued downward.



Trend of N.P.N. gasoline index during the past year comparing weighted average tank car prices in 13 markets with retail prices ex tax in 50 cities. See chart on page 54 for current index levels

Mid-Continent

Kerosine Tight

TULSA, March 14

GASOLINE appeared to be particularly sensitive to local weather and road conditions in the Mid-Continent marketing territory the past week. The result was a spotty market, with periods of activity and then quiet. Despite the irregular demand prices for Mid-Continent gasoline showed little fluctuation.

In several sections of the country, flurries of snow discouraged motor travel and resulted in a letup in jobber business. Floods in other parts of the country were holding back normal travel.

Generally, however, refiners who dispose of their gasoline through their own retail outlets or through contracted outlets reported shipments were almost normal in many sections of the country.

Open market shipments of gasoline to most marketing districts have improved materially the past two weeks. It would take only a few weeks of favorable weather, observers believed, before consumption would return to normal.

Increasing gasoline stocks in the Mid-Continent still were troubling the trade and to some extent affected jobber buying. Increasing stocks, to some jobbers, meant a possible break in gasoline prices. These buyers delayed making commitments. Market observers pointed out that record high stocks generally were held by refiners who ship almost exclusively to contract and company-owned outlets. They were of the opinion that present stocks would not affect the open market. Refiners who depend on the open market, observers pointed out, were not loaded with gasoline.

Stocks of motor fuel in East Texas have been reduced materially the past week or two. Reduced stocks came as a result of refinery shut-downs as well as increased shipments. One refiner, who held a large portion of the stocks in East Texas has been shut

down the past two weeks and had reduced inventory to bare working stocks. If present demand continues, this refiner indicated he might be forced to buy in the open market to meet his commitments. Several East Texas refiners indicated they might advance prices for low octane gasoline 0.125 cent if business continues good.

Increased demand for kerosine and the apparent scarcity of available supplies sent prices in many districts up 0.125 cent the past week. An analysis of shipments the past two or three weeks, indicates buying has been mostly of the inter-refinery type. A check with the most active refiner-buyers bears out the fact that they were unable to accumulate sufficient stocks of kerosine during the past month or two. With insufficient supplies to fill contract orders already booked, these refiners were forced to buy.

Now that jobbers are entering the market, the shortage of kerosine was becoming acute. So far jobber business has not attained its usual volume. Some buyers were looking toward kerosine made from Rodessa crude for a possible source of supply. But here again, they had little success. The volume of Rodessa kerosine still is insufficient to supply any appreciable deficiency in other districts.

Grade 26-70 natural gasoline was pegged at 3 cents in both Oklahoma and Texas the past week. Fewer offerings indicated that large quantities of natural were being stored at the Gulf and to some extent the return of refinery and jobber buying.

Mid-Continent neutral oil markets showed little reaction to the 1-cent reduction in Pennsylvania oils. For the most part, Mid-Continent refiners were in good shape as regards inventories. Slight increases were made in stocks the past month, but inventories were not considered excessive. Bright stock prices were steady. Increased inquiry for wax was reported.

Wax

Market Steady

NEW YORK, March 14—The market for crude scale wax remained steady during the week ended March 14. Prices for the 122-124 and 124-126 grades continued at a minimum of 2.5 cents, with a fair volume of sales reported at this figure. Manufacturers generally reported demand was satisfactory and stocks were low enough to keep selling pressure from the market.

The refined wax market continued to show no change from the prices which have prevailed for several weeks. Demand was reported fair to good.

A DISPLAY STAND WITHOUT COST . . .

With a knife, cut along the dotted lines, fold back the top and a display stand greets you.

A great many oil refiners have found it profitable to merchandise their products at point-of-sale through the use of attractively printed corrugated boxes. But they must be properly designed and colorfully printed. Hinde & Dauch do both—effectively, and the display stand feature costs nothing. Call on H & D the next time you order shipping boxes.

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REFINERY TANK CAR MARKETS

Prices in cents per gallon, tank car lots, except where otherwise noted. Prices are those to domestic jobbers who resell to consumers. They do not represent inter-refinery sales, or sales for export. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Gasoline *and* Naphtha

Oklahoma	March 16	March 9	March 2
48-54, 450 e.p. naphtha	4.875– 5.00	4.875– 5.00	4.875– 5.00
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
63-70 octane (regular)	6.00 – 6.125	6.00 – 6.125	5.875– 6.125
71 and above	.....	.....	.....
60-62, 400 e.p. gasoline	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
64-66, 375 e.p. gasoline	5.125– 5.25	5.125– 5.25	5.125– 5.25
68-70, 350-360 e.p. gasoline	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
Western Penna. (Quotations and/or sales prices to car unloaders)			
Bradford-Warren:			
52-54 naphtha	5.50 – 5.625	5.50 – 5.625	5.625– 5.75
Motor gasoline:			
U.S. Motor (58-62°)	5.625– 5.75	5.625– 5.75	5.75 – 5.875
Minimum 60 octane	7.00 – 7.125	7.00 – 7.125	7.125– 7.25
Minimum 65 octane	7.25 – 7.375	7.25 – 7.375	7.375– 7.50
Minimum 70 octane	.....	.....	.....
64-66, 390 e.p. gasoline	5.875– 6.00	5.875– 6.00	5.875– 6.00
68-70, 350-360 e.p. gasoline	6.125– 6.25	6.125– 6.25	6.125– 6.25
Other districts:			
52-54 naphtha	5.50 – 5.625	5.50 – 5.625	5.625– 5.75
54-56 naphtha	5.625– 5.75	5.625– 5.75	5.75 – 5.875
Motor gasoline:			
U.S. Motor (58-62°)	5.625– 5.75	5.625– 5.75	5.75 – 5.875
Minimum 60 octane	7.00 – 7.125	7.00 – 7.125	7.125– 7.25
Minimum 65 octane	7.25 – 7.375	7.25 – 7.375	7.375– 7.50
Minimum 70 octane	.....	.....	.....
64-66, 390 e.p. gasoline	5.875– 6.00	5.875– 6.00	5.875– 6.00
68-70, 350-360 e.p. gasoline	6.125– 6.25	6.125– 6.25	6.125– 6.25
California (3c tax to be added to prices if used in state)			
54-58 U.S. Motor, 437 e.p. for in-state shipment	4.00 – 4.50	3.75 – 4.50	3.75 – 4.50
54-58 U.S. Motor, 437 e.p. for outside state shipment	4.00 – 4.50	4.00 – 4.50	4.00 – 4.50
58-61, 375-400 e.p. gasoline, 65 octane and above	4.75 – 6.00	4.50 – 6.00	4.50 – 6.00
†***North Texas*** (F.o.b. Wichita Falls district for shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
63-70 octane (regular)	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
71 and above	.....	.....	.....
60-62, 400 e.p. gasoline	5.125	5.125	5.125
64-66, 375 e.p. gasoline	5.125– 5.25	5.125– 5.25	5.125– 5.25
68-70, 350-360 e.p. gasoline	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
Kansas (F.o.b. refinery, Kansas destination)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	5.25 – 5.375	5.25 – 5.375	5.375
63-70 octane (regular)	6.25 – 6.375	6.25 – 6.375	6.125– 6.25
71 and above	.....	.....	.....
60-62, 400 e.p. gasoline	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
†***West Texas and New Mexico*** (F.o.b. W. Texas and N. Mex. refineries for unrestricted shipment)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
63-70 octane (reg.)	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
71 and above	.....	.....	.....
†***East Texas*** (F.o.b. East Texas refinery for unrestricted shipment)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	4.875– 5.00	4.875	4.875
63-70 octane (reg.)	.....	.....	.....
71 and above	.....	.....	.....
60-62, 400 e.p. gasoline	4.875– 5.00	4.875	4.875
North Louisiana (For Louisiana and Arkansas destination)			
U. S. Motor gasoline:			
62 octane and below	5.75	5.75	5.75
63-70 octane number	6.75	6.75	6.75
71 octane and above	.....	.....	.....

†Refiners generally receive rom 0.25c to 0.5c per gallon more for gasoline and kerosine for local or differential territory shipment.

	March 16	March 9	March 2
Arkansas (For Arkansas and Louisiana destination)			
U. S. Motor gasoline:			
62 octane and below	5.75	5.75	5.75
63-70 octane number	6.75	6.75	6.75
71 octane and above	.....	.....	.....
Ohio (Quotations of S. O. Ohio. Delivered any point in Ohio).			
U. S. Motor gasoline..	8.75	8.75	8.625
Above 65 octane no.	9.00	9.00	8.875

Natural Gasoline

(Prices shown f.o.b. Group 3 and Breckenridge represent majority sales made on dates shown to blenders on the freight basis shown below, although shipments may originate in other manufacturing districts, such as East Texas, Panhandle, Southwest Texas or Kansas).

F.o.b. Group 3			
Grade 26-70	3.00	3.00 – 3.125	3.00
F.o.b. Breckenridge			
Grade 26-70	3.00	3.00	3.00
California (F. o. b. plants in Los Angeles basin)			
75-85, 375-390 e.p. for blending	5.25 – 5.75	5.25 – 5.75	5.25 – 5.75

Kerosine

Western Penna. (Quotations and/or sales prices to car unloaders)			
Bradford-Warren:			
45 w.w. kerosine	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
46 w.w. kerosine	5.375– 5.50	5.375– 5.50	5.375– 5.50
47 w.w. kerosine	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625
Other districts:			
45 w.w. kerosine	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
46 w.w. kerosine	5.375– 5.50	5.375– 5.50	5.375– 5.50
47 w.w. kerosine	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625
Oklaho ma			
41-43 w.w. kerosine	4.125– 4.25	4.00 – 4.125	3.875– 4.125
42-44 w.w. kerosine	4.25 – 4.50	4.125– 4.25	4.00 – 4.25
Kansas (F. o. b. refinery Kansas destination)			
41-43 w.w. kerosine	4.25 – 4.375	4.125– 4.25	4.125
42-44 w.w. kerosine	4.375– 4.625	4.25 – 4.375	4.25
†***North Texas*** (F.o.b. Wichita Falls district for shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments)			
41-43 w.w. kerosine	4.125– 4.25	4.125– 4.25	4.00 – 4.125
East Texas (F.o.b. East Texas refinery for unrestricted shipment)			
41-43 w.w. kerosine	*3.75 – 3.875	*3.75	*3.75

*Nominal.

North Louisiana (For Louisiana and Arkansas destination)			
41-43 w.w. kerosine	4.25	4.25	4.00
Arkansas (For Arkansas and Louisiana destination)			
41-43 w.w. kerosine	4.50	4.50	4.25
California (F.o.b. California refineries)			
38-40 w.w. kerosine	3.50 – 5.00	3.50 – 5.00	3.50 – 5.00

Gas *and* Fuel Oils

Western Penna. (Quotations and/or sales prices to car unloaders)			
Bradford-Warren:			
36-40 fuel oil	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
‡*Other districts*:			
36-40 fuel oil	4.625– 4.75	4.625– 4.75	4.625– 4.75

‡Not including Pittsburgh.

Oklahoma (F.o.b. Oklahoma refineries)			
No. 1 white fuel oil	3.625	3.625	3.625
No. 1 straw fuel oil	3.50	3.50	3.50
No. 2 straw fuel oil	3.50	3.50	3.50
No. 2 dark fuel oil	3.375	3.375	3.375
U. G. I. gas oil	2.625– 2.75	2.625– 2.75	2.50 – 2.625

(*Continued on next page*)

REFINERY TANK CAR MARKETS

Prices in cents per gallon, tank car lots, except where otherwise noted. Prices are those to domestic jobbers who resell to consumers. They do not represent inter-refinery sales, or sales for export. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

	March 16	March 9	March 2
Fuel oils: (Prices per barrel of 42 U. S. gallons)			
28-30, zero	3.25	3.25	3.25
28-30	$1.00 -$1.025	$1.00 -$1.025	$1.00 -$1.025
24-26	$0.80 -$0.85	$0.80 -$0.85	$0.80 -$0.85
18-22	$0.725-$0.775	$0.725-$0.775	$0.725-$0.775
14-16	$0.65 -$0.675	$0.65 -$0.675	$0.65 -$0.675
Kansas (F.o.b. refinery, Kansas destination)			
No. 1 prime white	3.875- 4.00	3.875- 4.00	3.75 - 3.875
18-22 fuel oil (per bbl.)	$0.80 -$0.825	$0.80 -$0.825	$0.80 -$0.825
10-14 fuel oil (per bbl.)	$0.675-$0.70	$0.675-$0.70	$0.675-$0.70
North Texas (F.o.b. Wichita Falls district for shipment to Texas and New Mexico; Group 3 prices quoted on northern shipments).			
No. 1 straw, fuel oil	3.50 - 3.625	3.50 - 3.625	3.50 - 3.625
No. 1 white, fuel oil	3.625	3.625	3.625
U.G.I. gas oil	2.50 - 2.625	2.50 - 2.625	2.50 - 2.625
No. 2 fuel oil	3.50 - 3.625	3.50 - 3.625	3.50 - 3.625
24-26 fuel oil (per bbl.)	$0.70 -$0.725	$0.70 -$0.725	$0.70 -$0.725
18-22 fuel oil (per bbl.)	$0.675-$0.70	$0.675-$0.70	$0.675-$0.70
West Texas (F.o.b. West Texas refineries for unrestricted shipment).			
No. 2 fuel oil	*3.375- 3.50	*3.375- 3.50	*3.375- 3.50
18-22 fuel oil (per bbl.)	$0.70 -$0.73	$0.70 -$0.73	$0.70 -$0.73
East Texas (F.o.b. East Texas refineries for unrestricted shipment).			
No. 1 white, fuel oil	*3.50 - 3.625	*3.50 - 3.625	*3.50 - 3.625
U.G.I. gas oil	2.50	2.50	2.50
No. 2 fuel oil	*3.25 - 3.375	*3.25 - 3.375	*3.25 - 3.375
24-26 fuel oil	$0.60 -$0.65	$0.60 -$0.65	$0.60 -$0.65
20-24 fuel oil	$0.60 -$0.625	$0.60 -$0.625	$0.60 -$0.625
North Louisiana (For Louisiana and Arkansas destination).			
No. 2 fuel oil	3.50 - 3.75	3.50 - 3.75	3.50 - 3.75
U.G.I. gas oil	2.875- 3.00	2.875- 3.00	2.875- 3.00
20-24 fuel oil (per bbl.)	$1.05 -$1.10	$1.05 -$1.10	$1.05 -$1.10
16-20 fuel oil (per bbl.)	$0.95 -$1.00	$0.95 -$1.00	$0.95 -$1.00
10-14 fuel oil (per bbl.)	$0.75 -$0.80	$0.75 -$0.80	$0.75 -$0.80
Arkansas (For Arkansas and Louisiana destination)			
No. 2 fuel oil	3.75	3.75	3.75
28-30 fuel oil, zero	3.25 - 3.50	3.25 - 3.50	3.25 - 3.50
20-24 fuel oil (per bbl.)	$0.825-$0.875	$0.825-$0.875	$0.825-$0.875
16-20 fuel oil (per bbl.)	$0.725-$0.775	$0.725-$0.775	$0.725-$0.775
10-14 fuel oil (per bbl.)	$0.60 -$0.65	$0.60 -$0.65	$0.60 -$0.65
California			
San Joaquin Valley, per bbl.:			
Grade C fuel oil	$0.60 -$0.75	$0.60 -$0.75	$0.55 -$0.75
Diesel fuel oil	$1.00 -$1.47	$1.05 -$1.47	$1.00 -$1.47
Stove distillate	$1.20 -$1.89	$1.25 -$1.89	$1.20 -$1.89
Los Angeles, per bbl.:			
Grade C fuel oil	$0.65 -$0.95	$0.65 -$0.95	$0.65 -$0.95
Diesel fuel	$1.00 -$1.47	$1.05 -$1.47	$1.00 -$1.47
Stove distillate	$1.20 -$1.89	$1.25 -$1.89	$1.20 -$1.89
San Francisco, per bbl.:			
Grade C fuel oil	$1.00	$1.00	$1.00
Diesel fuel	$1.68	$1.68	$1.68
Stove distillate	$2.10	$2.10	$2.10

Neutral Oils

Western Penna. (Quotations and/or sales prices to car unloaders)

	Viscous Neutrals (*Viscosity at 70° F.*)		
200 Vis. (180 at 100°) No. 3 color, 420-425 flash:			
0 pour test	23.00 -23.50	24.00 -24.50	24.00 -24.50
10 pour test	22.00 -22.50	23.00 -23.50	23.00 -23.50
15 pour test	21.50 -22.00	22.50 -23.00	22.50 -23.00
25 pour test	20.50 -21.00	21.50 -22.00	21.50 -22.00
180 Vis. (165 at 100) No. 3 color, 410-415 flash:			
25 pour test	19.50 -20.00	20.50 -21.00	20.50 -21.00
150 Vis. (143 at 100) No. 3 color, 400-405 flash:			
0 pour test	19.00 -19.50	20.00 -20.50	20.00 -20.50
10 pour test	18.00 -18.50	19.00 -19.50	19.00 -19.50
15 pour test	17.50 -18.00	18.50 -19.00	18.50 -19.00
25 pour test	16.50 -17.00	17.50 -18.00	17.50 -18.00

South Texas (F.o.b. South Texas refineries, for domestic shipment)

Vis. Color			
Pale Oils:	(*Viscosity at 100° F.; pour test 0*)		
100 No. 1½-2½	5.00	5.00	5.00
200 No. 2-3	7.00	7.00	7.00
300 No. 2-3	7.50	7.50	7.50
500 No. 2½-3½	8.50	8.50	8.50
750 No. 3-4	9.00	9.00	9.00
1200 No. 3-4	9.50	9.50	9.50
2000 No. 3-4	9.75 -10.00	9.75 -10.00	9.75 -10.00
Red Oils:			
200 No. 5-6	7.00	7.00	7.00
300 No. 5-6	7.50	7.50	7.50
500 No. 5-6	8.50	8.50	8.50
750 No. 5-6	9.00	9.00	9.00
1200 No. 5-6	9.50	9.50	9.50
2000 No. 5-6	9.75 -10.00	9.75 -10.00	9.75 -10.00

*Nominal

Note: South Texas red oil prices shown above cover oils with green cast: blue cast red oils are slightly lower in some cases.

Mid-Continent (Viscosity at 100° F.; F. o b. Tulsa basis. Prices represent quotations and sales)

	0 to 10 Pour Point:		
Pale Oils:			
Vis. Color			
60-85—No. 2	5.25	5.25	5.25
86-110—No. 2	5.75	5.75	5.75
150—No. 3	10.00	10.00	10.00
180—No. 3	11.25	11.25	11.25
200—No. 3	11.75	11.75	11.75
250—No. 3	13.75	13.75	13.75
280—No. 3	14.75	14.75	14.75
300—No. 3	15.25	15.25	15.25
Red Oils:			
180—No. 5	10.25	10.25	10.25
200—No. 5	10.75	10.75	10.75
250—No. 5	12.75	12.75	12.75
280—No. 5	13.75	13.75	13.75
300—No. 5	14.00	14.00	14.00

Note: Non-Viscous pale oils (60 to 110 Vis.) with a 15 to 25 pour point are quoted 0.5c under 0 to 10 pour test oils; pale and red viscous oils (150 to 300 Vis.) with 15 to 25 pour point are quoted 1c under 0 to 10 pour test oils. Viscous oils (150 to 300 Vis.) with a No. 4 color are quoted 0.5c above No. 5 color oils.

Chicago (F.o.b. Chicago refineries) (Vis. at 100° F.)

Pale Oils, *15 to 30 pour point:			
Vis. Color			
60-85—No. 2	6.50	6.50	6.50
86-110—No. 2	7.00	7.00	7.00
150—No. 3	10.00	10.00	10.00
180—No. 3	11.25	11.25	11.25
200—No. 3	11.75	11.75	11.75
250—No. 3	13.75	13.75	13.75
Red Oils, *15 to 30 Pour Point:			
180—No. 5	10.25	10.25	10.25
200—No. 5	10.75	10.75	10.75
250—No. 5	12.75	12.75	12.75
280—No. 5	13.25	13.25	13.25
300—No. 5	13.50	13.50	13.50

*60-110 vis. oils, with 0-10 pour point, bring 0.5c higher than above prices. Other oils with 0-10 pour point are quoted at 1c higher.

California (F.o.b. California refineries; Viscosity at 100° F.)

All neutral oils, 11.5c per gal. in tank car lots; and 13.5c in iron bbls., to refiners only, excluding federal tax.

Cylinder Stocks

Mid-Continent (F.o.b. Tulsa basis. Prices represent quotations and sales)

Bright Stocks:			
190-200 Vis. at 210° D	20.00	20.00	20.00
150-160 Vis. at 210° D:			
0 to 10 pour test	17.00	17.00	17.00
10 to 25 pour test	16.50	16.50	16.50
25 to 40 pour test	16.00	16.00	16.00
150-160 Vis. at 210° E	16.00	16.00	16.00
120 Vis. at 210° D:			
0 to 10 pour test	16.50	16.50	16.50
10 to 25 pour test	16.00	16.00	16.00
25 to 40 pour test	15.50	15.50	15.50
600 Stm. Rfd. Dark Green	5.50 - 6.50	5.50 - 6.50	5.50 - 6.50
600 Stm. Rfd. Olive Green	6.50 - 8.00	6.50 - 8.00	6.50 - 8.00
631 Steam Refined	*11.00	*11.00	*11.00
Black oil	3.25 - 3.375	3.25 - 3.375	3.25 - 3.375

*Only one refiner quoting.

Chicago (F.o.b. Chicago district refineries (Viscosity at 210°)

Unfiltered Steam Refined:			
140	9.00	9.00	9.00
160	10.00	10.00	10.00
200	11.00	11.00	11.00
Bright stocks, 160 vis. at 210 No. 8 color:			
0 to 10 pour point	18.75	18.75	18.75
15 to 25 pour point	18.25	18.25	18.25
30 to 40 pour point	17.75	17.75	17.75
E filtered Cyl. Stock	14.00	14.00	14.00

Western Penna. (A.S.T.M. tests; quotations and/or sales prices to car unloaders)

600 stm. rfd. filterable	11.50 -12.00	11.50 -12.00	‡11.00 -11.50
650 steam refined	12.50 -13.00	12.50 -13.00	12.50 -13.00

‡This price correct for Mar. 2.

(*Continued on next page*)

REFINERY TANK CAR MARKETS

Prices in cents per gallon, tank car lots, except where otherwise noted. Prices are those to domestic jobbers who resell to consumers. They do not represent inter-refinery sales, or sales for export. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Cylinder Stocks (cont'd)

	March 16	March 9	March 2
600 flash	13.50 -14.00	13.50 -14.00	13.50 -14.00
630 flash	17.50 -18.00	17.50 -18.00	17.50 -18.00
600 Warren E	13.50 -14.00	13.50 -14.00	13.50 -14.00
Bright stock, 145-155, vis. at 210°, 540-550 flash, No. 8 color:			
10 pour test	22.00 -22.50	22.00 -22.50	22.00 -22.50
15 pour test	21.00 -21.50	21.00 -21.50	21.00 -21.50
20 pour test	20.00 -20.50	20.00 -20.50	20.00 -20.50
25 pour test	19.00 -19.50	19.00 -19.50	19.00 -19.50

Petrolatums

Western Penna. (Per pound, in barrels, carload lots, f.o.b. Penna. refinery. In tank cars, 0.5c per pound less. Quotations are from majority of petrolatum makers).

Snow White	6.625	6.625	6.625
Lily White	5.625	5.625	5.625
Cream White	4.625	4.625	4.625
Light Amber	2.75	2.75	2.75
Amber	2.50	2.50	2.50
Red	2.00 - 2.125	2.00 - 2.125	2.00 - 2.125

Wax

	March 16	March 9	March 2
Western Penna. (Per pound, f.o.b. New York)			
122-124 wh. crude scale, A.m.p.	2.55 - 2.60	2.55 - 2.60	2.50 - 2.55
124-126 wh. crude scale, A.m.p.	2.60 - 2.65	2.60 - 2.65	2.55 - 2.60
Oklahoma (Per pound in barrels; in few instances, per pound in burlap bags; f.o.b. Oklahoma refineries)			
124-126 wh. crude scale, A.m.p.	2.625	2.625	2.50
Chicago (F.o.b. Chicago district refineries, in cents per pound, in bags, carload lots. Melting points A.S.T.M. method; add 3° F. to convert into A.m.p.)			
Fully refined:			
122-124	4.65 - 4.75	4.65 - 4.75	4.65 - 4.75
125-127	4.90 - 5.00	4.90 - 5.00	4.90 - 5.00
127-129	5.05 - 5.15	5.05 - 5.15	5.05 - 5.15
130-132	*5.45 - 5.55	*5.45 - 5.55	*5.45 - 5.55
132-134	*5.70 - 5.80	*5.70 - 5.80	*5.70 - 5.80
135-137	*6.45 - 6.55	*6.45 - 6.55	*6.45 - 6.55

*Same prices quoted in bags or slabs loose.

MID-WESTERN TANK CAR MARKETS

Following prices are in cents per gallon, except fuel oil in barrels of 42 U. S. gallons, in tank car lots, representing majority of sales of products made by Chicago sellers, from legally produced crude to jobbers on Group 3 freight basis, although shipments may originate in other South-western or Mid-western refining districts. Prices do not include state or federal taxes.

Gasoline

U. S. Motor gasoline:	March 16	March 9	March 2
62 octane and below (3rd grade)	4.875- 5.125	4.875- 5.125	*4.75 - 5.125
63-70 octane (reg.)	5.75 - 6.00	5.625- 6.00	5.50 - 6.00
71 octane and above			
60-62, 400 e.p.	4.875- 5.25	4.875- 5.25	*4.875- 5.25
64-66, 375 e.p.	5.125- 5.25	5.125- 5.25	5.25 - 5.375
68-70, 350-360 e.p.	5.25 - 5.375	5.25 -5.375	5.375- 5.50

Kerosine

41-43 w.w.	4.125- 4.25	4.00 -4.125	3.875
42-44 w.w.	4.25 - 4.375	4.125- 4.25	4.00

Fuel *and* Gas Oils

Domestic:			
No. 1 prime white	3.625- 3.75	3.625- 3.75	3.625- 3.75
No. 1 straw	3.375- 3.50	3.375- 3.50	3.375- 3.50

*Nominal.

	March 16	March 9	March 2
No. 2 straw	3.25 - 3.375	3.25 - 3.375	3.25 - 3.375
No. 2 dark	3.25	3.25	3.25
No. 3	3.125- 3.25	3.125- 3.25	3.125- 3.25
No. 4 (per bbl.)	$0.975-$1.05	$0.975-$1.05	$0.975-$1.05
No. 5 (per bbl.)	$0.70 -$0.75	$0.70 -$0.75	$0.70 -$0.75
Industrial:			
No. 4, (per bbl.)	$0.875-$0.90	$0.875-$0.90	$0.875-$0.90
No. 5, (per bbl.)	$0.625-$0.675	$0.625-$0.675	$0.625-$0.675
No. 6, (per bbl.)	$0.55 -$0.60	$0.55 -$0.60	$0.55 -$0.60
U.G.I. gas oil	2.375- 2.50	2.25 - 2.375	2.25 - 2.375

Naphtha *and* Solvent

Stoddard solvent	6.875	6.875	6.875
V. M. & P. naphtha	7.375	7.375	7.375
Cleaners' naphtha	7.375	7.375	7.375
Mineral spirits	6.375	6.375	6.375
Rubber solvent	7.375	7.375	7 375
Lacquer diluent	8.375	8.375	8.375

DAILY GASOLINE PRICES

Daily range of gasoline prices (cents per gallon) in tank cars, as reported in PLATT'S OILGRAM, (Week Ended March 13, 1936).

	March 9	March 10	March 11	March 12	March 13
U. S. Motor, 62 octane & below (3rd grade):					
East Texas	4.875	4.875	4.875	4.875	4.875
*North Texas	5.00 - 5.125	5.00 - 5.125	5.00 - 5.125	5.00 - 5.125	5.00 - 5.125
West Texas	5.00 - 5.125	5.00 - 5.125	5.00 - 5.125	5.00 - 5.125	5.00 - 5.125
Oklahoma	5.00 - 5.125	5.00 - 5.125	5.00 - 5.125	5.00 - 5.125	5.00 - 5.125
Mid-Western (Group 3 basis)	4.875- 5.125	4.875- 5.125	4.875- 5.125	4.875- 5.125	4.875- 5.125
U. S. Motor, 63-70 octane (regular):					
East Texas					
*North Texas	6.00 - 6.125	6.00 - 6.125	6.00 - 6.125	6.00 - 6.125	6.00 - 6.125
West Texas	6.00 - 6.125	6.00 - 6.125	6.00 - 6.125	6.00 - 6.125	6.00 - 6.125
Oklahoma	6.00 - 6.125	6.00 - 6.125	6.00 - 6.125	6.00 - 6.125	6.00 - 6.125
Mid-Western (Group 3 basis)	5.625- 6.00	5.75 - 6.00	5.75 - 6.00	5.75 - 6.00	5.625- 6.00
Motor Gasoline, 60-64 octane					
New York harbor	7.00	7.00	7.00	7.00	7.00
Philadelphia district	6.75 - 7.00	6.75 - 7.00	6.75 - 7.00	6.75 - 7.00	6.75 - 7.00
Baltimore district	6.75	6.75	6.75	6.75	6.75
Motor Gasoline, 65 octane & above					
New York harbor	7.25	7.25	7.25	7.25	7.25
Philadelphia district	7.00 - 7.25	7.00 - 7.25	7.00 - 7.25	7.00 - 7.25	7.00 - 7.25
Baltimore district	7.00	7.00	7.00	7.00	7.00
U. S. Motor Gasoline, 58-62°					
Bradford-Warren (Western Penna.)	5.625- 5.75	5.625- 5.75	5.625- 5.75	5.625- 5.75	5.625- 5.75
Other districts (Western Penna.)	5.625- 5.75	5.625- 5.75	5.625- 5.75	5.625- 5.75	5.625- 5.75
Motor Gasoline, Minimum 60 octane					
Bradford-Warren (Western Penna.)	7.00 - 7.125	7.00 - 7.125	7.00 - 7.125	7.00 - 7.125	7.00 - 7.125
Other districts (Western Penna.)	7.00 - 7.125	7.00 - 7.125	7.00 - 7.125	7.00 - 7.125	7.00 - 7.125
Motor Gasoline, Minimum 65 octane					
Bradford-Warren (Western Penna.)	7.25 - 7.375	7.25 - 7.375	7.25 - 7.375	7.25 - 7.375	7.25 - 7.375
Other districts (Western Penna.)	7.25 - 7.375	7.25 - 7.375	7.25 - 7.375	7.25 - 7.375	7.25 - 7.375

*For shipment to Texas and New Mexico destinations; Group 3 prices are quoted on northern shipments.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect March 16, 1936, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. New Jersey

Essolene

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Atlantic City, N. J..	7.8	10.3	4	17.8	9
Newark, N. J.....	7.8	10.3	4	17.8	7.5
Annapolis, Md.....	8.1	10.6	5	19.1	10
Baltimore, Md.....	7.5	10	5	18.5	8.5
Cumberland, Md....	9.1	11.6	5	20.1	12.7
Washington, D. C...	7.5	10	3	16.5	9
Danville, Va.....	9	11.5	6	21	12.9
Norfolk, Va.....	7.5	10	6	19.5	11.3
Petersburg, Va.....	8	10.5	6	20	11.7
Richmond, Va.....	8	10.5	6	20	11.7
Roanoke, Va.....	9	11.5	6	21	12.9
Charleston, W. Va...	8.3	10.8	5	19.3	12.6
Parkersburg, W. Va..	7.6	10.1	5	18.6	11.2
Wheeling, W. Va....	8.6	11	5	19.5	12.2
Charlotte, N. C.....	9.2	11.7	7	22.2	12.9
Hickory, N. C.....	9.5	12	7	22.5	13.1
Mt. Airy, N. C.....	9.5	12	7	22.5	13.2
Raleigh, N. C.....	8.9	11.4	7	21.9	12.7
Salisbury, N. C.....	9.3	11.8	7	22.3	13
Charleston, S. C.....	7.5	10	7	20.5	11.3
Columbia, S. C.....	8.8	11.3	7	21.8	12.6
Spartanburg, S. C...	9.2	11.7	7	22.2	12.9

Price basis to undivided dealers: Dealer t.w. price less 0.5c per gal.

Price basis to commercial consumers: Beginning Feb. 11, 1935, all new commercial consumers will be signed on following differentials over tank car price, on yearly purchases: up to 35,999 gals., 2.5c over t.c.; 36,000 to 119,999 gals., 2c; 120,000 to 239,999 gals., 1.5c; 240,000 to 479,999 gals., 1c; and over 480,000 gals., 0.5c.

Above prices apply only when deliveries are made in lots of 50 or 100 gals. at one time, depending on code region in which deliveries are effected.

If deliveries are made in less than these minimum quantities, s.s. price at time and place of delivery applies.

Non-contract customers will be billed at 2.5c over tank car price at time and place of delivery.

Kerosine Discount: 1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(S. O. New York Division)

Socony Mobilgas

	"Split" Dealer T.W.	Taxes	Total "Split" Dealer T.W.	S.S.	Kerosine T.W.
Metropolitan N. Y. City:					
Boroughs of Manhattan and Bronx.	9.7	*5	14.7	19.2	7.25
Borough of Richmond (Staten Is.).	9.7	*5	14.7	19.2	7.25
Borough of Brooklyn (Kings and Queens)	9.7	*5	14.7	19.2	7.25
Albany, N. Y.....	9	5	14	17.5	7.75
Binghamton, N. Y...	10.5	5	15.5	19	9
Buffalo, N. Y.....	9.5	5	14.5	18	8.25
Jamestown, N. Y....	10	5	15	18.5	8
Plattsburg, N. Y....	11.5	5	16.5	19.5	8.75
Rochester, N. Y.....	9.5	5	14.5	18	8.25
Syracuse, N. Y.....	9.5	5	14.5	18	8.75
Danbury, Conn.....	10.5	4	14.5	18	8
Hartford, Conn.....	10.5	4	14.5	18	7
New Haven, Conn..	9	4	13	16.5	7.5
Bangor, Me.....	10	5	15	18.5	8.5
Portland, Me.....	9.5	5	14.5	18	7.75
Boston, Mass.....	8.5	4	12.5	15	7.5
Concord, N. H.....	10.5	5	15.5	18.5	8.5
Lancaster, N. H.....	12	5	17	20.5	9.5
Manchester, N. H...	10	5	15	18	8
Providence, R. I....	8.5	3	11.5	15	7.25
Burlington, Vt.....	12	5	17	20.5	8.75
Rutland, Vt.....	9.5	5	14.5	17	8.5

*Plus 2% city sales tax computed at time of each sale.

Discounts to dealers: thru territory, off normal s.s. price, 4c to undivided dealers, and 3.5c to "split" dealers; except Metropolitan N. Y. City, undivided dealers get 4.5c and divided dealers get 4c, effective Feb. 24.

To commercial consumers: Effective Feb. 4, 1935, covering yearly purchases, billed at posted tank car price, plus these differentials: 2.5c for delivery of 1,200 to 36,000 gals.; plus 2c, for 36,000 to 120,000 gals.; plus 1.5c for 120,000 to 240,000 gals.; plus 1c for 240,000 to 480,000 gals.; plus 0.5c for 480,000 gals. and over. Those buying less than 1,200 gals. yearly, get retail s.s. price.

Atlantic Refining

Atlantic White Flash Plus Gasoline

	Total T.W.	Taxes	T.W.	S.S.	Kerosine T.W.
Philadelphia, Pa.....	12	5	17	19	9.5
Pittsburgh, Pa.....	12.5	5	17.5	19.5	10
Allentown, Pa.....	12	5	17	19	9.5
Erie, Pa.....	11.5	5	16.5	16.5	9
Scranton, Pa.....	12.5	5	17.5	16.75	10
Altoona, Pa.....	12.5	5	17.5	19.5	9.5
Dover, Del.....	12	5	17	19	10
Wilmington, Del....	11.5	5	16.5	18.5	9.5
Boston, Mass.....	8.5	4	12.5	16	7.5
Springfield, Mass...	10	4	14	17.5	7.5
Worcester, Mass....	9	4	13	16.5	7.75
Fall River, Mass....	9.75	4	13.75	16	7.25
Providence, R. I....	8.5	3	11.5	15	7.25
Hartford, Conn.....	10.5	4	14.5	18	7
New Haven, Conn..	10.5	4	14.5	17	7.5
Atlantic City, N. J..	10.3	4	14.3	17.8	9
Camden, N. J.....	10.3	4	14.3	17.8	8
Trenton, N. J.....	10.3	4	14.3	17.8	8
Annapolis, Md.....	10.6	5	15.6	19.1	9.5
Baltimore, Md.....	10	5	15	18.5	7.5
Hagerstown, Md....	11.1	5	16.1	19.6	10
Richmond, Va.....	10.5	6	16.5	20	11.7
Wilmington, N. C...	10.1	7	17.1	20.6	11.4
Brunswick, Ga.....	11.5	7	18.5	20.5	*13
Jacksonville, Fla....	10	8	18	20	10

Dealer discounts: on Atlantic White Flash Plus gasoline, thru territory, divided dealers, price equal to 3.5c off posted s.s. price; undivided dealers, price equal to 4c off posted s.s. price; authorized dealers contracts previous to Aug. 19, 1933, price equal to 3c less than posted s.s. price, plus 1c rental.

Price basis to commercial consumer: Effective Oct. 1, 1935, on yearly gasoline purchases based on posted tank car prices plus following amounts: 1,200 to 36,000 gals., 2.5c over t.c.; 36,000 to 120,000 gals., 2c; 120,000 to 240,000 gals., 1.5c; 240,000 to 480,000 gals., 1c; 480,000 gals. and over, 0.5c.

S. O. Ohio

Sohio X-70 Gasoline

Ohio statewide.....	12.5	5	17.5	19.5	*13.5
Counties below statewide gasoline schedule:					
Butler county....	11.5	5	16.5	17.5	....
Franklin, Hocking and Jackson:	12	5	17	18.5	....

Renown (Third Grade Gasoline)

Ohio statewide.....	12	5	17	18	....
Counties below statewide gasoline schedule:					
Franklin and Hocking:	11.5	5	16.5	17	....
Counties above statewide schedule:					
Champaign, Clarke, Darke, Fairfield, Greene, Hamilton, Miami, Montgomery, Preble and Summit.....	12.5	5	17.5	19.5	....
Jackson.....	12	5	17	18.5	....
Butler county.....	11.5	5	16.5	17.5	....

Statewide Prices to Resellers & Agents

(These prices are on sliding scale based on actual spread between S. O. Ohio statewide tank car price and posted local s.s. price).

Including taxes	†Undivided Accounts	Divided Accounts	**Authorized Agents
Sohio X-70....	16	16.5	16.5
Renown (3rd grade)..	15.5	16	16

Note: On single deliveries of motor gasolines under 25 gallons, to t.w. consumers, s.s. price applies.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices." S. O. Ohio says.

*Kerosine prices include 1c state tax. Kerosine t.w. price in Hardin, Portage, Summit and Wyandot counties is 12.5c; Gallia county is 13c.

†Excluding authorized agents.

**Excluding 0.5c rental.

Discounts to contract tank wagon consumers only: on all motor gasolines thru Ohio, except Hamilton County, effective Dec. 1, 1934, off posted t.w. price, on deliveries per month: 1,000 to 9,999 gals., 1.5c per gal. 10,000 gals. and over, 2.5c. Under 1,000 gals., full t.w. price. Single deliveries of less than 25 gals., full s.s. price. Additional yearly discounts (less amount paid or credited to buyer on monthly purchases), off t.w. price: 12,000 to 119,999 gals., 1.5c, 120,000 gals. or over, 2.5c. In Hamilton county: less than 100 gal. deliveries, full s.s. price; 100 to 3,000 gals., 1.5c off t.w.; 3,000 to 10,000 gals., 2.5c; and over 10,000 gals., 3c off t.w.

Discounts on kerosine: to dealers and commercial consumers, 3c per gal. off t.w. price, any quantity.

S. O. Kentucky

Crown Gasoline

	Total T.W.	Taxes	T.W.	S.S.	Kerosine T.W.
Lexington, Ky.....	14	6	20	22	11
Louisville, Ky.....	13	6	19	21	10
Paducah, Ky.....	13	6	19	21	10
Covington, Ky.....	12.5	6	18.5	20.5	10.5
Jackson, Miss.....	13	7	20	22	*13
Vicksburg, Miss....	12.5	7	19.5	21.5	*13
Birmingham, Ala...	13	*8	21	23	12
Mobile, Ala.....	12	*8	20	22	11
Montgomery, Ala...	13	*9	22	24	*14.5
Macon, Ga.....	13	7	20	22	*14.5
Atlanta, Ga.....	13.5	7	20.5	22.5	*13.5
Augusta, Ga.....	13	7	20	22	*14
Savannah, Ga.....	11.5	7	18.5	20.5	*13
Jacksonville, Fla....	10	8	18	20	12
Miami, Fla.....	11.5	8	19.5	21.5	13.5
Tampa, Fla.....	10	8	18	20	12.5
Pensacola, Fla.....	12.5	*9	21.5	23.5	12

Kyso (Third Grade)

Lexington, Ky.....	13	6	19	20.5	....
Louisville, Ky.....	11	6	17	18	....
Paducah, Ky.....	11.5	6	17.5	19	....
Covington, Ky.....	11	6	17	18.5	....
Jackson, Miss.....	11	7	18	19	....
Vicksburg, Miss.....	10.5	7	17.5	18.5	....
Birmingham, Ala....	11	*8	19	20	....
Mobile, Ala.....	8.5	*8	16.5	17	....
Montgomery, Ala...	10.5	*9	19.5	20	....
Atlanta, Ga.....	10.5	7	17.5	18	....
Augusta, Ga.....	10	7	17	17.5	....
Macon, Ga.....	10	7	17	17.5	....
Pensacola, Fla.....	11	*9	20	21.5	....

Dealer Discount: off posted s.s. price, on Crown and Crown Ethyl gasolines to "undivided" dealers 4c; on Kyso, 3c. To "divided" dealers, Crown and Ethyl, 3.5c, and Kyso, 2.5c, all effective on or about Jan. 1, 1934.

Discounts to tank wagon consumers: all single deliveries of 50 gals. or less, get posted s.s. price; all single deliveries of 50 gals. or more, to be billed at posted t.w. price, plus following discounts, off posted t.w. price: Ethyl and Crown gasoline, 50 to 2,999 gals. monthly, 1.5c; Kyso, 1c; 3,000 to 24,999 gals., Ethyl and Crown, 2c; Kyso, 1.5c; 25,000 gals. or more, Ethyl and Crown, 3c; and Kyso, 2.5c.

**Taxes*: in the tax column is included these city and county gasoline taxes at the following points: Birmingham, 1c city; Mobile, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Mississippi kerosine prices include 1c state tax Montgomery kerosine price include 1c city tax.

S. O. Indiana

Standard Red Crown Gasoline

Chicago, Ill.....	10.5	4	14.5	16.5	9.8
Decatur, Ill.....	12	4	16	18	9.8
Joliet, Ill.....	12	4	16	16.5	9.8
Peoria, Ill.....	12	4	16	18	9.8
Quincy, Ill.....	11.8	4	15.8	17.8	9.6
Indianapolis, Ind....	12.9	*5	17.9	19.9	‡14.3
Evansville, Ind.....	12.7	*5	17.7	19.7	‡14.3
South Bend, Ind....	13.1	*5	18.1	20.1	‡14.7
Detroit, Mich.....	10	4	14	16	8
Grand Rapids, Mich.	12.4	4	16.4	18.4	8
Saginaw, Mich.....	12.6	4	16.6	18.6	9.3
Green Bay, Wisc....	12.7	5	17.7	19.7	10.5
Milwaukee, Wisc....	10.8	5	15.8	17.3	10.1
La Crosse, Wisc.....	12.4	5	17.4	19.4	10.2
Minneapolis, Minn..	12.4	4	16.4	18.4	10.2
Duluth, Minn.....	12.8	4	16.8	18.8	10.6

Above prices include these inspection fees on both gasoline and kerosine, per gallon, figured on basis of 50 gallons per barrel:

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida, 1/8c; Illinois, 3/100c; Indiana, 1/2c per gal. in a single barrel; 3/10c per gal. in lots of 2 to 10 bbls., 1/5c for 10 to 50 bbls., 2/25c for over 50 bbls; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal. in lots of more than 50 bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee, 2/5c; and Wisconsin, 1/25c.

Kerosine inspection fee only: Iowa, 2/25c; Michigan, 4/5c per gal for first 2 bbls.; 3/5c for next 3; 2/5c for next 5; 3/10c for next 15, and 1/5c per gal. in lots over 25 bbls.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect March 16, 1936, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. Indiana—Cont'd

Standard Red Crown Gasoline

	T.W.	Taxes	Total T.W.	Total S.S.	Kerosine T.W.
Mankato, Minn.	12.4	4	16.4	18.4	10.2
Des Moines, Iowa	11.8	4	15.8**	18.8	9.6
Sioux City, Iowa	12	4	16	**18	9.8
Davenport, Iowa	12	4	16	**18	9.8
Mason City, Iowa	12.2	4	16.2**	18.2	10
St. Louis, Mo.	11.7	†4	15.7	17.7	9.5
Kansas City, Mo.	11.4	†4	15.4	17.4	9.2
St. Joseph, Mo.	11.4	†4	15.4	17.4	9
Fargo, N. D.	13.4	4	17.4	19.4	11.2
Minot, N. Dak.	14.6	4	18.6	20.6	12.4
Huron, S. Dak.	12.9	*5	17.9	19.9	10.7
Wichita, Kans.	10.9	4	14.9	16.9	6.8

Note: Kerosine s.s. prices are generally 3c above normal t.w. price.

Stanolind Gasoline (Third Grade)

Stanolind normal prices are 1c under normal Red Crown prices, thru territory. Among subnormal points are the following:

Decatur, Ill.	11	4	15	16.5	....
Evansville, Ind.	11.7	*5	16.7	18.2	....
Indianapolis, Ind.	11.9	*5	16.9	18.4	....
Des Moines, Iowa	9.1	4	13.1**	17.8	....
St. Louis, Mo.	10.7	†4	14.7	14.7	....
Detroit, Mich.	8.5	4	12.5	14.5	....
Milwaukee, Wis.	9.8	5	14.8	16.3	....
Huron, S. D.	11.9	*5	16.9	18.9	....
Wichita, Kans.	8	4	12	14.4	....
Minneapolis, Minn.	11.4	4	15.4	15.4	....

†St. Louis, Kansas City and St. Joseph prices include 1c city tax. ‡Includes 4c state tax.

*South Dakota gasoline and kerosine prices include 0.1c for sales tax. Indiana t.w. and s.s. gasoline prices include 0.2c for chain store tax.

**Service station prices for gasoline at Iowa points represent the opinion of National Petroleum News as to prices prevailing at the majority of stations.

Discounts to dealers: Effective Dec. 1, 1934, thru territory, except Michigan effective Apr. 1, 1935, and except Chicago division and Iowa, maximum discounts to controlled and uncontrolled undivided gasoline accounts, off s.s. price at normal points: Ethyl and Red Crown gasoline, 3.5c; Stanolind 2.5c; in Chicago, effective July 1, 1935, Ethyl and Red Crown, 4c; Stanolind, 3c. Divided gasoline accounts thru territory, get 0.5c less per gallon. In case of lease and agency and AAA accounts, the above discounts include the 0.5c per gal. rental allowance. In Iowa, normal dealer prices are 1.5c below normal t.w. price for first and second grade gasolines, and 0.5c under normal t.w. for third grade.

Discounts to commercial consumers: Effective Jan. 1, 1935, thru territory, except Michigan effective Feb. 1, on purchases per month, discount off t.w. price; all gasolines, 25 to 1,000 gals., at at t.w. price; 1,000 gals. or more, 1.5c off t.w. on Ethyl and Red Crown, and 0.5c on Stanolind. Purchases of less than 25 gals. get regular s.s. price.

S. O. Nebraska

Standard Red Crown Gasoline

Omaha, Neb.	12.4	6	18.4	20.4	10.1
McCook, Neb.	13.1	6	19.1	21.1	9.8
Norfolk, Neb.	12.8	6	18.8	20.8	10.5
North Platte, Neb.	13.2	6	19.2	21.2	10.9
Scottsbluff, Neb.	13.9	6	19.9	21.9	11.6

Reliance Gasoline (Third Grade)

Omaha, Neb.	11	6	17	17	....
McCook, Neb.	11.6	6	17.6	18	....
Norfolk, Neb.	11.8	6	17.8	19.8	....
North Platte, Neb.	12.2	6	18.2	20.2	....
Scottsbluff, Neb.	12.9	6	18.9	20.9	....

Discount to dealers: where service station gasoline prices are normal, resellers' allowance off service station prices are (*Maximum* over-all, including rent) as follows: Reliance, 2½c; Standard Red Crown, and Solite with Ethyl, 3½c. Where service station gasoline prices are below normal, resellers' allowances are reduced one-half of the amount below normal, down to the following (*Minimum* over-all including rent): Reliance, 2c, Standard Red Crown and Solite with Ethyl, 3c.

Discounts to consumers: for tank wagon deliveries covered only by Standard Commercial Consumer Contract, effective January 1, 1935.

S. O. Louisiana

Essolene

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Little Rock, Ark.	8	10.5	7.5	21.5	11.5
Alexandria, La.	8	10.5	*8	22	*10.5
Baton Rouge, La.	8	10.5	*7	21	*11.5

S. O. Louisiana—Cont'd

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
New Orleans, La.	7.25	9	*9	21.5	*12
Lake Charles, La.	8.5	11	*8	22.5	10
Shreveport, La.	7.5	10	*7	20.5	*9
Lafayette, La.	8.5	11	*8	22.5	12.5
Bristol, Tenn.	9.5	10.75	8	21.5	14.5
Chattanooga, Tenn.	10	12.5	8	24	11.5
Knoxville, Tenn.	10.5	13	8	24.5	14
Memphis, Tenn.	8.5	11	8	22.5	9.5
Nashville, Tenn.	9.5	12	8	23.5	10

*Baton Rouge and Shreveport gasoline tax includes 5c state tax, 1c federal tax, and 1c parish tax. Alexander, Lake Charles and Lafayette, 2c parish tax. New Orleans, 3c parish tax. Louisiana kerosine prices include 1c state tax.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Price basis to commercial consumers: Effective Feb. 11, 1935, commercial consumers not under contract will be billed at 2.5c per gal. above posted bulk plant tank car price at time and place of delivery in lots of 50 gals. or more at one time. Contract customers will be billed at following differentials over tank car price, on yearly purchases: up to 35,999 gals., 2.5c over tank car price; 36,000 to 119,999 gals., 2c over; 120,000 to 239,999 gals., 1.5c; 240,000 to 479,999 gals., 1c; 480,000 gals. and over, 0.5c.

On single deliveries to all classes of commercial consumers, of less than 50 gals., s.s. price at time and place of delivery applies.

Magnolia Petroleum

Mobilgas

	T.W.	Taxes	Total T.W.	Total S.S.	Kerosine T.W.
Muskogee, Okla.	10	5	15	19	7
Oklahoma City	10	5	15	19	8
Tulsa, Okla.	10	5	15	19	8
Fort Smith, Ark.	10.5	5	15.5	19	8
Little Rock, Ark.	10.5	7.5	18	21.5	9.5
Texarkana, Ark.	9.5	5	14.5	18.5	8
Dallas, Tex.	8.5	5	13.5	17	8
Ft. Worth, Tex.	8.5	5	13.5	17	8
Houston, Tex.	10	5	15	19	8
San Antonio, Tex.	10	5	15	19	8
El Paso, Tex.	11	5	16	20	10
Roswell, N. M.	11.5	††6.5	18	22	10
Santa Fe, N. M.	12.5	**7	19.5	23.5	12

Metro Gasoline (Third Grade)

Muskogee, Okla.	9	5	14	17	....
Oklahoma City	8.5	5	13.5	16	....
Tulsa, Okla.	9	5	14	17	....
Fort Smith, Ark.	10.5	5	15.5	15.5	....
Little Rock, Ark.	10.5	7.5	18	18.5	....
Texarkana, Ark.	7.5	5	12.5	15.5	....
Dallas, Tex.	7	5	12	14	....
Ft. Worth, Tex.	7	5	12	14	....
Houston, Tex.	8	5	13	16	....
San Antonio, Tex.	8	5	13	16	....
El Paso, Tex.	9	5	14	17	....
Roswell, N. M.	8	††6.5	14.5	17.5	....
Santa Fe, N. M.	11.5	**7	18.5	21.5	....

*In Texarkana, 4c Texas tax applies; outside Texarkana, 6.5c Arkansas tax applies.

†In Fort Smith, 4c Oklahoma tax applies outside Fort Smith, 6.5c Arkansas tax applies.

**Includes 1c city tax.

††Includes 0.5c city tax.

Note: *Price basis to dealers* off s.s. price in t.w., bulk or bbl. deliveries, on Mobilgas and Ethyl, normally: to 100% dealers, 4c; to divided dealers, 3.5c. On Metro gasoline in Texas, Oklahoma and New Mexico: to 100% dealers, 3c; to divided dealers, 2.5c. On Metro, in Arkansas and Louisiana: to 100% dealers, 3.25c.

Price basis to consumers: Thru Texas, effective Jan. 1, 1936, New Mexico, effective Jan. 18, and Oklahoma, effective Feb. 20, all grades of gasoline invoiced on the same graduated scale as now allowed 100% dealers, which see in above paragraph. Thru Arkansas and Louisiana, all grades gasoline invoiced at consumer's t.w. price, which on Mobilgas and Ethyl, normally is 3.5c less than s.s. price, less following contract quantity discounts at end of month, on all three grades, on monthly purchases: 3,001 to 10,000 gals., 0.5c; 10,001 to 20,000 gals., 1c; 20,001 to 40,000 gals., 1.5c; and 40,001 gals. and over, 2c. Metro invoiced at same price as Mobilgas.

Continental Oil

Conoco Bronze Gasoline

Denver, Colo.	14	5	19	21	11
Pueblo, Colo.	14	5	19	21	13
Grand Junction, Col.	16	5	21.5	23.5	15

Continental Oil—Cont'd

Conoco Bronze Gasoline

	T.W.	Saxes	Total T.W.	Total S.S.	Kerosine T.W.
Casper, Wyo.	14.5	5	19.5	21.5	11.5
Cheyenne, Wyo.	14.5	5	19.5	21.5	13
Billings, Mont.	14.5	6	20.5	22.5	16.5
Butte, Mont.	16	6	22	24	17.5
Great Falls, Mont.	15.5	6	21.5	23.5	17.5
Helena, Mont.	16.5	6	22.5	24.5	17.5
Salt Lake City, Utah.	16	5	21	23	16
Boise, Ida.	16.5	6	22.5	24.5	18
Twin Falls, Ida.	17	6	23	25	18
Albuquerque, N.M.	14.5	†6.5	21	23	13

Demand (Third Grade)

Denver, Colo.	12	5	17	19	....
Cheyenne, Wyo.	12.5	5	17.5	19.5	....
Helena, Mont.	14.5	6	20.5	22.5	....
Salt Lake City, Utah.	14	5	19	21	....
Boise, Ida.	14.5	6	20.5	22.5	....
Albuquerque, N. M.	12.5	†6.5	19	21	....

†Includes city tax of 0.5c.

Discounts: effective March 1, 1934, on gasolines thru territory, off s.s. price: to "undivided" dealers: Ethyl and Conoco Bronze, 4c; Demand, 3c; to "divided" dealers: Ethyl and Conoco Bronze, 3.5c; Demand, 2.5c.

S. O. California

Standard Gasoline

San Francisco, Cal.	8.5	4	12.5	13.5	11.5
Los Angeles, Cal.	8.5	4	12.5	13.5	10.5
Fresno, Cal.	9	4	13	14	9
Phoenix, Ariz.	10.5	6	16.5	17.5	†16
Reno, Nev.	10	5	15	16	13
Portland, Ore.	9	6	15	16	13.5
Seattle, Wash.	9	6	15	16	13.5
Spokane, Wash.	12	6	18	19	16.5
Tacoma, Wash.	9	6	15	16	13.5

Flight Gasoline (Third Grade)

San Francisco, Cal.	7	4	11	12	....
Los Angeles, Cal.	6.5	4	10.5	11.5	....
Fresno, Cal.	7.5	4	11.5	12.5	....
Reno, Nev.	8.5	5	13.5	14.5	....
Phoenix, Ariz.	9	6	15	16	....
Portland, Ore.	7.5	6	13.5	14.5	....
Seattle, Wash.	7.5	6	13.5	14.5	....
Spokane, Wash.	10.5	6	16.5	17.5	....
Tacoma, Wash.	7.5	6	13.5	14.5	....

†Includes 5c state tax.

Discounts to dealers: on gasoline: on Stanavo Aviation, Standard Ethyl, and Standard gasolines, to 100% dealers, 4c below t.w. price; on Flight, 3c per gal. below t.w. To "split" dealers, all brands gasoline 3c below t.w.

Effective September 24, 1935, to commercial consumers, off t.w.: advance quantity discount from above prices extended at time of delivery, on Stanavo Aviation, Standard Ethyl and Standard gasolines, 2c per gal.; Flight, 1c.

On kerosine: tank car delivery, 3.5c off t.w. price to all classes of trade; transport truck and trailer deliveries, 3.5c below t.w. to resellers; plant deliveries to jobbers, 3c below t.w.

Canada

Prices of Imperial Oil Ltd.

Per Imperial Gallon, which is 1.2 U. S. Gallons

Imperial Three Star Gasoline

	T.W.	Taxes	Total T.W.	Total S.S.	Kerosine T.W.
Hamilton, Ont.	15	6	21	23.5	17
Toronto, Ont.	15	6	21	23.5	17
Brandon, Man.	23.8	7	30.8	33.8	22.3
Winnipeg, Man.	22.2	7	29.2	32.2	20.7
Regina, Sask.	23.5	7	30.5	33.5	22
Saskatoon, Sask.	26.3	7	33.3	36.3	24.8
Edmonton, Alta.	25.7	7	32.7	35.7	24.2
Calgary, Alta.	23	7	30	33	21.5
Vancouver, B. C.	19	7	26	29	24
Montreal, Que.	13.5	6	19.5	22	17.5
St. John, N. B.	17	8	25	29	19 5
Halifax, N. S.	17	8	25	29	19.5

Discounts to Dealers:

Maritime Provinces, 4c per gallon off s.s. price to all classes of dealers. Quebec, except Montreal City, Prairie Provinces and British Columbia, 3c to divided dealers, 4c to undivided dealers. Ontario and Montreal City, 2½c to divided dealers, 3½c to undivided dealers.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect March 16, 1936, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

Aviation Gasoline

Following are tank car and/or tank wagon prices of aviation gasoline in principal marketing territories (Stanavo aviation in all territories except Continental Oil and Magnolia Pet. Co.) Tax column includes 1c federal tax, and state tax; also municipal taxes as indicated in footnotes.

Effective March 16, 1936

S. O. New Jersey

	Tank Car	T.W.
Bayonne, N. J.	10	12
Baltimore, Md.	10	12
Washington, D. C.		12.6
Richmond, Va.		13.5

S. O. New Jersey (Continued)

	T.W.
Greensboro, N. C.	14.9
Raleigh, N. C.	14.6
Charleston, W. Va.	14.2

Colonial Beacon Oil Co.

	T.W.
Brooklyn, N. Y.	12.8
Buffalo, N. Y.	13.7
Boston, Mass.	14

S. O. Pennsylvania

Philadelphia, Pa.	14.1
Pittsburgh, Pa.	14.9

S. O. Louisiana

New Orleans, La.	12.3
Shreveport, La.	12.6

Prices in above four territories do not include state or federal taxes. They are for 73 octane grade aviation gasoline. An 80 octane product generally brings 0.5c premium and an 87 octane product, 1.5c premium over the 73 octane grade.

Note: S.a. prices in above four territories are generally 6c over t.w. prices. Above t.w. prices are net, with no discounts allowed for quantity purchases. T.w. prices are generally tank car price, plus freight, plus 2.5c per gal.

S. O. Ohio

	T.W.	Tax	Total T.W.
Thru Ohio: (To Commercial Consumers) Stanavo Ethyl Aviation (73 Octane)	15.5	5	20.5

Discounts: For delivery on contract to hangar operators and resellers: 2c below commercial consumer posted t.w. price

S. O. Indiana

Chicago, Ill.	15	4	19
Indianapolis, Ind.	15.9	5	20.9
Detroit, Mich.	16.5	4	20.5
Milwaukee, Wisc.	15.3	5	20.3
Minneapolis, Minn.	15.4	4	19.4
St. Louis, Mo.	13.7	*4	17.7
Kansas City, Mo.	14.4	*4	18.4
Fargo, N. D.	16.4	4	20.4
Huron, S. D.	15.9	5	20.9
Wichita, Kans.	13.9	4	17.9

*Includes 1c city tax.
**Includes 0.1c to cover sales tax.

Magnolia Petroleum

Dallas, Tex.	11.5	5	16.5

Humble Oil & Refining Co.

	Tank Car
Baytown, Tex. (exclusive of taxes)	8.5

Continental Oil Co.

	T.W.	Tax	Total T.W.
Denver, Colo.	17	5	22
Cheyenne, Wyo.	17	5	22
Helena, Mont.	20.5	6	26.5
Salt Lake City, Utah	19	5	24
Albuquerque, N. M.	17.5	*6.5	24

*Includes city tax of 0.5c.

S. O. California

Phoenix, Ariz.	14	6	20
Los Angeles, Cal.	11.5	4	15.5
San Francisco, Cal.	12	4	16
Reno, Nev.	14	5	19
Portland, Ore.	12.5	6	18.5
Seattle, Wash.	12.5	6	18.5
Spokane, Wash.	15.5	6	21.5

Note: For discounts, etc., see note under Standard and Flight gasoline above.

Naphtha

In Effect March 16, 1936

(In Tank Wagon or Steel Barrels; in Cents per Gallon)

	Mineral Spirits	V.M.&P. Naphtha	Light Cleaner Naphtha	*Solvent
Altoona, Pa.	....	....	....	17
Baltimore (net)	11	10	....	9.5
Boston (net)	12	13.5	13.5	12
Bridgeport	....	....	....	13.5
Buffalo (net)	....	....	....	14
Chicago	16.2	16.5	15.5	15.5
Detroit	†17.9	†19	....	†19
Kansas City	13.9	14.9	14.9	13.9
Lancaster, Pa.	....	....	....	17
Milwaukee	18.8	†19.8	19.8	18.8
Minneapolis	†17.9	†18.9	†18.9	†17.4
Newark (net)	13	....	....	13
†New York	11	12	12	11
Philadelphia (net)	11.5	10	13	9.5
Providence (net)	11	10	....	11
Rochester (net)	‡12	....	....	‡12
St. Louis	14.2	15.2	15.2	13.5
Syracuse	....	....	....	14

Petroleum Spirits (Solvent)

In Tank Cars (F.o.b. refinery or seaboard terminal)	
New York Harbor	9.5
Philadelphia district	9
Providence	9.5

Note: 2c off above t.w. prices to large buyers in some instances.

*In the East, prices apply on product generally known as Mineral Spirits; in the middlewest, prices apply on Stanosol (S.O. Indiana grade of Stoddard Solvent).

†At the following points, these taxes and/or discounts apply on the products specified: Detroit, first three products include 3c state tax, prices applying on 150 gals. or more, with prices 1c higher for less than 150 gals.; Milwaukee, V.M. & P. price includes 4c state tax; Minneapolis, first 3 products include 3c state tax; price for solvent for less than 100 gals. is 1c higher; at New York, prices on all four grades, 0.5c discount for 20,000 gals. or more yearly.

‡Purchases of at least 150 gallons.

Latest Changes

From Mar. 10 to Mar. 16 inclusive. Dates and amounts of changes shown. See table for full current prices. Changes are on gasoline unless kerosine is indicated.

S. O. Ohio—X-70 and Renown:

Butler County, t.w. cut 1c, s.s. cut 2c, March 14.

Kerosine:

Portage County, cut 1c, March 12.
Gallia County, cut 0.5c, March 12.
Summit County, cut 1c, March 10.

S. O. Indiana—Kerosine:

Thru territory, prices restored to normal, except Kansas, Michigan, several smaller cities in Illinois and Randolph county, Ind., unchanged, March 16. Advances ranged from 0.8c to 2.7c at the following points: Green Bay, up 1.5c; South Bend, up 2.7c; Huron, up 2.2c; Kansas City, up 1.2c; St. Joseph, up 0.8c and Quincy, up 1.6c.

Tanker Shipments Fall

LOS ANGELES, March 13 — Offshore tanker shipments of petroleum products showed a material decline in February 1936, as compared with February 1935, according to preliminary estimates prepared by the Oil Producers Agency. Shipments of crude registered a small gain.

Intercoastal shipments registered the greatest decline, dropping from 43,614 barrels daily in February 1935 to 16,231 barrels in February of this year. Total shipments of gasoline dropped from 52,955 barrels daily in February 1935 to 38,105 barrels daily in February 1936. Atlantic foreign shipments of this product were practically the same in the two comparative periods, being 11.751 barrels daily last year and 11,968 barrels daily this year.

Oppose Tax Diversion

NEW YORK, March 14—A resolution opposing diversion of motor vehicle and gasoline tax revenues for non-highway purposes and the continuance of the federal gasoline tax was adopted by the Association of Highway Officials of the North Atlantic States, at its recent meeting at Atlantic City, N. J.

Opposition to diversion of gasoline taxes into general funds and other non-road purposes and to the federal gasoline tax also was expressed by Walter F. Reddy, chairman of the Gasoline Tax Division of Michigan in a recent statement. Mr. Reddy complimented Michigan's 800 licensed gasoline distributors, stating that during 1935 there was only one delinquency in gasoline tax payments to the state.

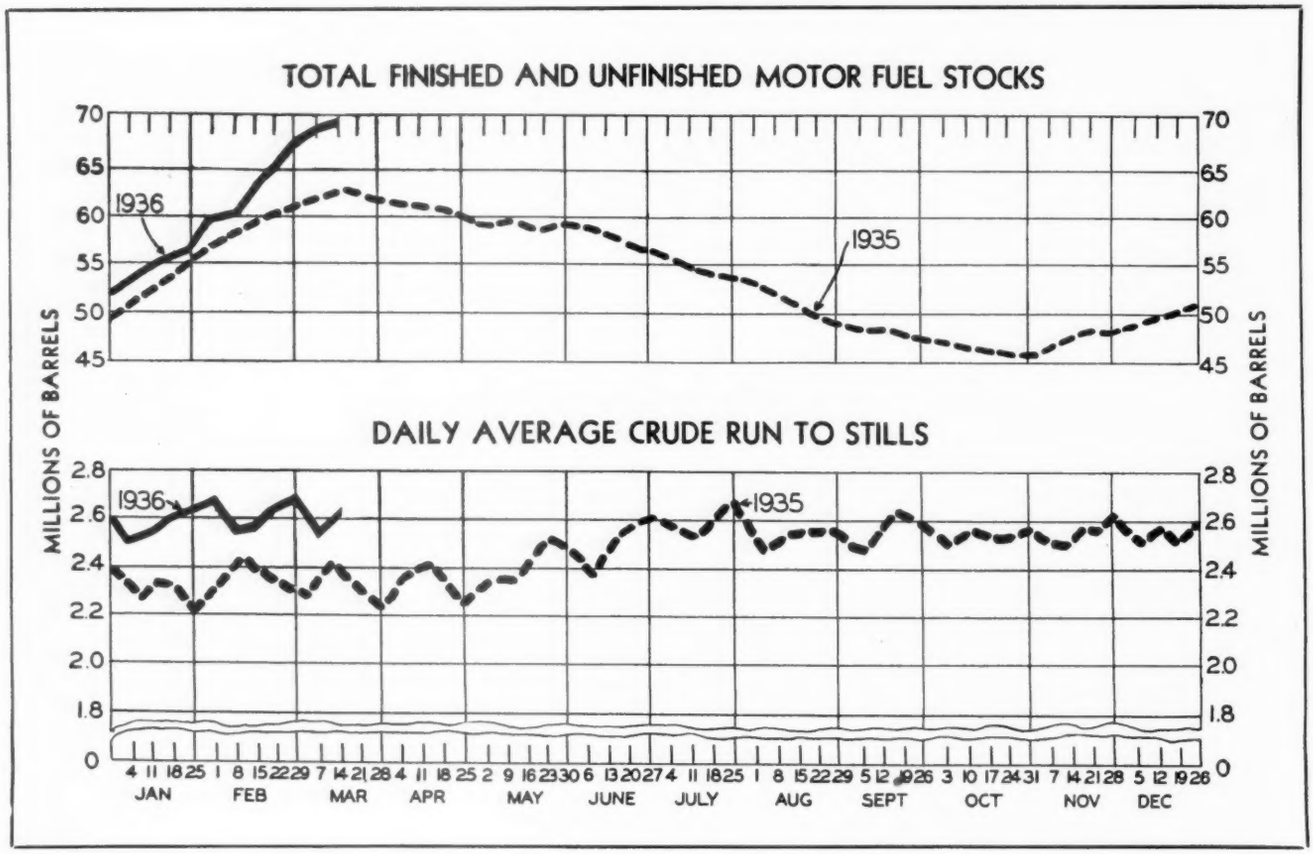
Ohio Gas Tax Collections Up 8.52%

COLUMBUS, March 11—Consumption of gasoline in January, 1936, totaled 75,839,951 gallons based on reports received by the gasoline tax division of the state, and compiled by Edward Reiser. This is an increase of 5,960,926 gallons or 8.52% over January, 1935. In December, 1935, consumption was 76,610,259 gallons. The Ohio gasoline tax law is on a receipts basis.

Can Supply Own Needs

LONDON, March 1.—The claim that Germany can eventually cover her requirements of petroleum from home production was made in Berlin recently by Professor Steinbrecher in a lecture before the German Association for Oil Investigation. He admitted, however, that she produced barely 35 per cent of the total consumption at present.

U. S. Crude Runs and Gasoline Stocks as Reported Weekly by A. P. I.



Motor Fuel Stocks Rise 441,000 Barrels

(By Teletype)

NEW YORK, March 17

REFINERY crude runs rose 90,000 barrels the week ended March 14, to 2,619,000 barrels daily average, according to the American Petroleum Institute. Gasoline stocks, which had been rising 2,000,000 barrels per week the past five weeks, increased only 441,000 barrels in the week ended March 14.

Gasoline stocks at refineries rose 1,136,000 barrels to 43,583,000 barrels and stocks of unfinished gasoline rose 198,000 barrels, to 6,805,000 barrels. Intransit and terminal stocks stood at 18,769,000 barrels a decline of 893,000 barrels from the previous week.

Total bulk stocks of motor fuel stood at 69,157,000 barrels on March 14, as compared with 68,716,000 barrels March 7. The largest increases were at East Coast and at Gulf plants, these amounting to 163,000 barrels and 370,000 barrels respectively. Four districts indicated losses in stocks.

Crude runs to stills increased in amounts ranging from 1000 barrels in the Louisiana-Arkansas district to 25,000 barrels in Oklahoma-Kansas-Missouri. Texas Gulf plants decreased runs by 2000 barrels.

Reporting plants cover 89.6 per cent of the country's refineries, operating at 75.5 per cent capacity the past week, as compared with 72.9 per cent the previous week.

CURRENT REFINERY OPERATIONS

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks (Thousands of Barrels) Total Finished and Unfinished Motor Fuel*		Total Finished and Unfinished Gas & Fuel Oil		Cracked Gasoline Production % Total Capacity Reporting	Daily Av. Production (Barrels) Week Ended	
		Mar. 14	Mar. 7	Mar. 14	Mar. 7	Mar. 14	Mar. 7	Mar. 14	Mar. 7		Mar. 14	Mar. 7
East Coast	100.0	494,000	491,000	80.7	80.2	18,172	18,009	6,320	5,787	100.0	106,000	105,000
Appalachian	94.8	110,000	96,000	75.3	65.8	2,905	2,895	675	722	98.7	24,000	23,000
Ind., Ill., Ky.	95.9	382,000	372,000	90.1	87.7	11,484	11,509	2,732	2,536	99.7	107,000	110,000
Okla., Kans., Mo.	84.8	246,000	221,000	64.1	57.6	7,961	8,034	2,440	2,508	89.1	55,000	57,000
Inland Texas	48.5	91,000	91,000	56.9	56.9	1,927	1,861	1,416	1,415	70.9	24,000	25,000
Texas Gulf	96.8	571,000	573,000	86.8	87.1	9,440	9,233	6,424	7,013	98.5	128,000	136,000
La. Gulf	96.4	130,000	119,000	79.8	73.0	1,849	1,686	2,473	2,596	96.1	23,000	26,000
No. La., Ark.	90.0	37,000	36,000	51.4	50.0	400	410	410	414	95.7	10,000	8,000
Rocky Mt.	61.9	43,000	37,000	71.7	61.7	1,647	1,608	704	697	84.8	13,000	14,000
California	92.6	515,000	493,000	65.3	62.5	13,372	13,471	70,635	70,567	100.0	65,000	61,000
Total Reporting	89.6	2,619,000	2,529,000	75.5	72.9	69,157	68,716	94,229	94,255	95.9	555,000	565,000
Estimated U.S. Total (Bur. of Mines Basis.)		2,815,000	2,725,000			72,722	72,281	95,862	95,888		590,000	600,000

*Includes stocks at refineries, in bulk terminals, pipe lines and in transit.

HEAVY OILS *Feature* MARKETS

AS THE weather continued to moderate, heavy industrial oils were in greatest demand in fuel oil markets the second week of March. Orders for the lighter grades had not ceased entirely, of course, but were considerably less than during the extreme cold weather.

The comparatively high rate of industrial operations in many sections of the country has resulted in a relatively tight tank car market for industrial fuel oils. This is in contrast with a year ago when offerings of the heavier grades were excessive in some markets.

Despite the slump in demand for the lighter fuel oils, prices remained unchanged. Refiners' inventories were still below normal as result of the recent heavy demand. It probably will be several weeks before they are up to normal. In some markets the No. 1 oil has been held up by the demand for tractor fuel.

* * *

CHICAGO, March 14.—Heavy industrial oils were getting most of the play in the Mid-Western fuel oil market as light oil demand tapered off with the break in weather.

Demand for industrial fuel from large users was reported brisk. This was especially true of steel plants in the Chicago area, where operations were at a higher rate than they had been at any time in the past three or four years.

No. 1 prime white oil was being bolstered by the tight kerosine market. Other grades of light fuels, however, were inclined to taper off under the pressure of added offerings which were not finding ready takers. Shaded offerings were becoming more pronounced as the week ended.

* * *

NEW YORK, March 14.—Light fuel oil markets remained on an even keel along the eastern seaboard during the past week. Moderate weather throughout the eastern marketing area brought a continued lessening in demand for these products, but movement still was heavy enough to keep the market in fair shape.

No appreciable change was noted in tank car or barge prices for Nos. 2 and 4 fuel oils, despite the lighter movement. Suppliers generally reported they still were not long on these oils. Their stocks had gotten abnormally low and it would take several weeks to bring them up to a normal working level.

Heavy fuel oil markets remained tight along the seaboard. Several major companies were reported short of bunker oil and have been buyers in the barge market at New York harbor and other terminal points. No changes were reported in either tank wagon or ships' bunker prices.

TULSA, March 14.—Movement of light fuel oils from Mid-Continent refineries was sluggish the second week in March. Orders placed earlier in the month were moving out readily with ample supplies available for immediate delivery.

While there was little interest shown in light fuels for heating purposes at present, there were few cancellations or orders placed a short time after the cold weather subsided. Most refiners reported they had little material in storage. Now since demand has slumped, they have switched production from heating oil to tractor fuel and kerosine.

U. G. I. gas oil and 24-26 fuel oil were almost unobtainable in many Mid-Continent districts. Prices, however, have failed to reflect this scarcity.

Heavy fuel oils were tighter. Movement to railroads was heavy and most supplies were already committed for railroad consumption.

FUEL OILS

Following are tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

Prices in Effect March 16, 1936

	No. 1	No. 2	No. 3	No. 4
S. O. New Jersey				
Newark, N. J.	7.5	6.75	6.75	6.75
Atlantic City, N. J.	8	7	7	6.5
Baltimore, Md.	7.5	5.5	5.5	5
Washington, D. C.	8.25	7	7	7

Discounts: At Newark and Atlantic City, purchasers taking 50,000 gals. get discount of 0.5c per gal.

Socony-Vacuum Oil Co., Inc. (S. O. New York Division)				
New York City	7.25	7.00	7.00	6.50
Albany, N. Y.	7.75	7.25	7.25	6.75
Rochester, N. Y.	8.25	7.50	7.50	7.50
Boston, Mass.	7.25	6.75	6.75	6.75
Bangor, Me.	8.75	7.00	7.00	7.00
Manchester, N. H.	8	7.25	7.25	7.25
Burlington, Vt.	8.75	7.75	7.75	7.75
New Haven, Conn.	7	6.25	6.25	6.25
Providence, R. I.	7.25	6.75	6.75	6.25

Discounts: At New York City, consumers taking 10,000 to 50,000 gals., get 0.25c per gal discount when minimum amount has been reached; above 50,000 gals., 0.5c.

Atlantic Refining				
Philadelphia, Pa.	7.50	6.25	6.25	5.75
Allentown, Pa.	8	6.75	6.75	6.75
Wilmington, Del.	7.50	6.25	6.25	5.75
Springfield, Mass.	7.50	7	..	7
Worcester, Mass.	7.75	7.25	....	7.25
Hartford, Conn.	7	7	....	7
S. O. Ohio				
Ohio Statewide	8	7.75	7.50	7.25

Note: S. O. Ohio prices are for hose dumps; bucket dumps are 0.5c per gallon higher.

S. O. Indiana
Stanolex Fuel Oil

	No. 1	No. 3
Chicago	7.25	6.5
Indianapolis	*11.7	*11.2
Detroit	6.8	6.8
Milwaukee	8	7
Minneapolis	8.2	7.2
Sioux City	8.8	6.4
St. Louis	7.2	6.5
Kansas City	6.6	5.9

*Includes state tax of 4c.

Note: Small-lot deliveries of light fuel oils range from 0.5c to 1.5c higher than above quotations.

Furnace Oils Advance

CHICAGO, March 16 — Coincident with the kerosine price advance reported in the tank wagon table of this issue, No. 1 furnace oil prices were restored, March 16, to so-called normal levels throughout the Standard Oil Co. of Indiana territory, with exception of Kansas and Michigan, Chicago, East St. Louis, Peoria, Springfield and several smaller points in Illinois; and Madison and Sheboygan, Wis., which were unchanged.

Repeal City Gasoline Tax

NEW YORK, March 14—The city of DeLand, Florida, repealed its city gasoline tax on March 1, according to information obtained by the American Petroleum Industries Committee. City officials said the tax had worked a hardship on residents of the town and had not produced the expected revenue.

It also was reported that Panama City, Florida has exempted from its local tax all gasoline stored within the city limits, but sold outside.

New Car Emblem

NEW YORK, March 16.—The Tide Water Oil Co. has adopted a safety emblem in the form of a red reflecting emblem for the rear bumpers of customers' cars. The emblem is now being distributed through the company's dealers, according to John D. Collins, general sales manager.

The emblem, measuring 7 by 4.5 inches, is a bright red metal reproduction of the Tide Water company's "Little Engineer," created by O. Soglow, originator of the cartoon character "The Little King." When carried on the rear bumper it becomes illuminated at night by the headlights of following cars.

Hygrade Shifts to Gulf

BUFFALO, N. Y., March 16—The Hygrade Petroleum Corp. has taken over the distribution of Gulf products, effective March 15. The company will distribute through 95 of its own stations and 400 dealers throughout western New York state, including Buffalo.

The Hygrade company has been a distributor of Shell products for the past 14 years.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a.m. of dates as given.

Eastern Fields

Posted by Joseph Seep Purchasing Agency

(Effective Jan. 13, 1936)

Penna. Grade Oil in Southwest Penna. Pipe Lines.....$2.17
Penna. Grade Oil in Eureka Pipe Lines (West Virginia).....$2.12
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.).....$1 97
Corning Oil in Buckeye Pipe Lines (Ohio) $1.42

Posted by Other Companies

Tide Water Pipe Co., Ltd. Bradford-Alleghany district (Penna. and N. Y.) (Effective Jan. 13, 1936)..$2.45
The Pennzoil Co.: (Effective Jan. 13, 1936) Penna. Grade Oil in National Transit Lines.....$2.42
Ashland Oil & Transportation Co.: Somerset Oil in Ashland Lines (Ky.): (Effective Jan. 9, 1936)
Big Sandy River.....$1.30
Kentucky River.....$1.38

*The Pennzoil Co. posts $2.42 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields; prices in other lower districts range down to $2.37 per bbl. at well.

Michigan

Posted by Pure Oil Co.

Midland, Midland County (Jan. 14, 1936) $1.32

Posted by Simrall Pipe Line Corp.

(Effective Jan. 14, 1936)

West Branch and equal grades.....$1.16
Beaverton, Crystal, Greendale, Porter and equal grades.....$1.32

Central States Fields

Posted by Ohio Oil Co.

(Effective Jan. 9, 1936)

Illinois, Princeton, Western Kentucky..$1.23

(Effective Jan. 10, 1936)

Lima.....$1.25

Posted by Stoll Oil Refining Co.

(Effective Jan. 9, 1936)

Stoll Pipe Line Oil (Ky.).....$1.28

Canadian Fields

Posted by Imperial Oil Refineries, Ltd.

Western Ontario

(Effective Sept. 9, 1933)

Petrolia.....$2.10
Oil Springs.....$2.17

Alberta—Turner Valley

(Prices f.o.b. field tankage)

Crude: (Effective Dec. 9, 1933)		Naphtha: (Effective May 21, 1934)	
40-44.9	$1.50	†Clear	$2.55
45-49.9	2.07	†Discolored	$2.31

(Effective May 21, 1934)
50 and above..$2.19

†Clear naphtha: 22 color; 10 lbs. vapor pressure, Reid method; 90% recovery; end point, 410°, Discolored naphtha: same specifications as for clear naphtha except color.

Mid-Continent

Posted by Stanolind Crude Oil Purchasing Co.

(Effective Jan. 9, 1936)

(In Oklahoma-Kansas)	(In North-North Central Texas)
Below 29.....$0.94	$0.84
29-29.9..... 0.96	0.86
30-30.9..... 0.98	0.88
31-31.9..... 1.00	0.90
32-32.9..... 1.02	0.92
33-33.9..... 1.04	0.94
34-34.9..... 1.06	0.96
35-35.9..... 1.08	0.98
36-36.9..... 1.10	1.00
37-37.9..... 1.12	1.02
38-38.9..... 1.14	1.04
39-39.9..... 1.16	1.06
40 and above.... 1.18	1.08

Above Stanolind prices met as follows:
Jan. 9, by The Texas Co. in North and North Central Texas; Continental Oil in all three states.

Note: Stanolind prices in Okla.-Kans. are for quantities computed by 97% tank tables. In Texas, 99% tank tables are used, volume corrected to 60° F., and deduction for full b.s. & w. content.

Posted by Carter Oil Co.

(In Oklahoma

(Effective Jan. 9, 1936)

Below 25	$0.86	33-33.9	$1.04
25-25.9	0.88	34-34.9	1.06
26-26.9	0.90	35-35.9	1.08
27-27.9	0 92	36-36.9	1.10
28-28.9	0.94	37-37.9	1.12
29-29.9	0.96	38-38.9	1.14
30-30.9	0.98	39-39.9	1.16
31-31.9	1.00	40 and above	1.18
32-32.9	1 02		

Jan. 9, Carter's Oklahoma gravity and price schedule met in Oklahoma-Kansas by Sinclair-Prairie, and Humble's West Central Texas schedule met in North and North Central Texas where Sinclair-Prairie buys. Same day, Shell Petroleum met Carter in full in Oklahoma-Kansas.

Posted by Magnolia Petroleum Co.

(Effective Jan. 9, 1936)

In Oklahoma, same schedule as Carter Oil, which see above, beginning with below 25, at $0.86 and ending with 40 & above, at $1.18.

In Texas: North and North Central, including Burkburnett, Archer, Stephens, Henrietta, Electra, Comanche and Olden; and in Central Texas, including Mexia, Wortham, and Panola county, same gravity and price schedule as Humble in West Central Texas, which see below, beginning with below 29 at $0.84, and ending with 40 and above, at $1.08.

†***Posted by Humble Oil & Refining Co.***

Texas Fields

(**West Central Texas*)

(Effective Jan. 9, 1936)

Below 29	$0.84	35-35.9	$0.98
29-29.9	0.86	36-36.9	1.00
30-30.9	0.88	37-37.9	1.02
31-31.9	0.90	38-38.9	1.04
32-32.9	0.92	39-39.9	1.06
33-33.9	0.94	40 and above.	1.08
34-34.9	0.96		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young counties.

Shell Petroleum Corp., on Jan. 9, met Humble in Fisher county, except that Shell posts five lower grades, beginning with below 25 gravity at $0.76; 25-25.9, $0.78; 26-26.9, $0.80; 27-27.9, $0.82; and 28-28.9, $0.84; rest of schedule same as Humble's in West Central Texas.

†Effective Dec. 1, 1934, Humble prices are based on 99% tank tables at 60F. Allowance or deduction of 1% is made for each 25° change in temperature above or below 60F.

**East Central Texas*

(Effective Jan. 9, 1936)

Below 29	$0 91	35-35.9	$1.05
29-29 9	0.93	36-36.9	1.07
30-30.9	0 95	37-37.9	1.09
31-31 9	0.97	38-38.9	1.11
32-32 9	0.99	39-39.9	1.13
33-33 9	1.01	40 and above.	1.15
34-34 9	1.03		

*Including Anderson, Cherokee, Limestone, Navarro and Van Zandt counties.

Stanolind Oil & Gas Co., Jan. 20, posted in Marion County (East Central Texas), below 29 oil at $0.86, plus 2c differential, to 40 and above at $1.10.

Jan. 9, Sinclair-Prairie met Humble's prices in Me ia.

Panhandle Texas

Posted by Humble Oil & Refining Co.

(Effective Jan. 9, 1936)

	Gray County	Carson-Hutchinson
Below 35	$0.86	$0.81
35-35.9	0.88	0.83
36-36.9	0.90	0.85
37-37.9	0.92	0.87
38-38.9	0 94	0.89
39-39.9	0.96	0.91
40 & above	0.98	0.93

Jan. 9, above prices met by Sinclair-Prairie, Magnolia and The Texas Co. in the entire area, also by Continental Oil in Carson-Hutchinson.

East Texas

(Effective Jan. 9, 1936)

Stanolind, Humble, Shell, Sinclair-Prairie, Texas, Sun Oil and Magnolia.....$1.15

Shell also posted on Jan. 9 in Livingston area, Polk County, Texas, $1.15.

West Texas and New Mexico

Posted by Humble Oil & Refining Co.

(Effective Jan. 14, 1936)

(Including Andrews, Crane, Crockett, Ector, Glasscock, Howard, Winkler and Upton Counties, Texas, and Lea county, New Mexico).

Below 29	$0.75	33-33.9	$0.84
29-29.9	0.76	34-34.9	0.86
30-30.9	0.78	35-35.9	0.88
31-31.9	0.80	36 & above..	0.90
32-32.9	0.82		

Pecos, West Texas.....$0.85

Posted by Continental Oil Co.

(Effective Jan. 9, 1936)

Artesia, Jackson and Maljamar pools, N. M. $0.80

Jan. 16, Magnolia met Humble in Crane, Upton, Howard, Glasscock, Mitchell and Winkler.

Jan. 9, Texas Co. posted Winkler and Lea counties at $0.85; Crane and Upton, $0.80.

Shell Petroleum Corp., on Jan. 23, met Humble in Crane, Glasscock, Howard, Pecos (except Yates shallow pool), Winkler, and Upton counties, Tex., and in Lea County, N. Mex. On Jan. 9, Shell posted in Yates shallow pool in Pecos county, Tex., $0.75.

South and Southwest Texas

Posted by Humble Oil & Refining Co.

(Effective Jan. 14, 1936)

Darst Creek	$0.97	Pettus	$1.25
Salt Flat	0.97	Tomball	1.30
Saxet	0.90	Mirando	0.85

Shell Pet. Corp. on Jan. 9, posted $0.97 in Salt Flat district, Tex.

Anahuac (Chambers county) and Dickinson (Galveston county)

(Effective Jan. 9, 1936)

30-30.9	$1.04	36-36.9	$1.16
31-31.9	1.06	37-37.9	1.18
32-32.9	1.08	38-38.9	1.20
33-33.9	1.10	39-39.9	1.22
34-34.9	1.12	40 & above	1.24
35-35.9	1.14		

Jan. 9, The Texas Co. posted $0.97 for Darst Creek.

Jan. 9, Magnolia posted $0.97 in Darst Creek; $1.30 in Tomball; $0.90 in Luling; $1.00 in Lytton Springs; $0.85 for Mirando; $1.10 for Cleveland, Liberty county, Tex.; $1.03 in Hardin, Liberty county, Tex.

Posted by Humble

Conroe and Raccoon Bend

(Deep sand crudes)

(Effective Jan. 9, 1936)

35-35.9	$1.24	38-38.9	$1 30
36-36.9	1.26	39-39.9	1 32
37-37.9	1.28	40 & above	1.34

Jan. 9, Texas Co. met above prices.

North Louisiana-Arkansas

Posted by Standard Oil Co. of Louisiana

(Effective Jan. 10, 1936)

(In Caddo, Homer, Haynesville, Sabine, De Soto, Rodessa, Sarepta, Carterville, El Dorado and Miller county)

Below 25	$0.78	33-33.9	$0 96
25-25.9	0.80	34-34.9	0 98
26-26.9	0.82	35-35.9	1 00
27-27.9	0 84	36-36.9	1 02
28-28.9	0.86	37-37.9	1 04
29-29.9	0.88	38-38.9	1 06
30-30.9	0.90	39-39.9	1 08
31-31.9	0.92	40 and above.	1.10
32-32.9	0.94		

Smackover, Ark.....$0 75
Nevada, Ark..... 0 65
Urania, La. (La. Oil Refg. Co., Jan. 1, '34) 0 87
Tepetate, La. (Continental Oil, Jan. 9, '36) $1.12

The Texas Co., effective Jan. 9, posted in No. La.-Ark. same prices as Humble posts in West Central Texas. It also posted $0.80 for Smackover and $1.12 for La Fitte, La.

Magnolia Petroleum Co., effective Jan. 16, posted on No. La.-Ark. crude, prices beginning with $0.86 for below 29 gravity, plus 2 cent differential to 40 and above, at $1.10. It also posted on the same day, Eldorado (East Field), and Smackover, Ark., $0.75; Lockport, La., below 20 gravity, at $0.92, plus 2c differential, to 34 and above, which is $1.22; and for Iowa, La. and Cameron-Meadow field, Cameron Parish, La., below 20 at $0.82, plus 2c differential, to 34 and above, at $1.12.

Stanolind Oil & Gas Co., Jan. 20, posted in Caddo Parish, La., below 29 oil at $0.86, plus 2c differential, to 40 & above at $1.10.

Shell Pet. on Jan. 9, posts same schedule in Black Bayou and White Castle, La. as Magnolia posts in Lockport, which see in above paragraph and in Iowa district, La. posts same schedule as Magnolia in Iowa and Cameron, which also see above.

(Continued on next page)

NEW REFINING PATENTS

Sulfuric acid recovery. No. 2 023 456, issued Dec. 31, 1935; filed Feb. 9, 1934; G. W. J. Bradley, Rotherham, England; four diagrams; 9 claims.

PROCESS and apparatus for recovery of sulfuric acid from the acid tar resulting from the purification process, in which the acid tar is introduced in a thin stream into a body of boiling water. The acid tar is run directly from the benzol agitator in a thin stream into the bottom of a vessel provided with a steam heating coil in the lower part.

* * *

Asphalt. No. 2 026 039, issued Dec. 31, 1935; filed July 15, 1932; G. R. Hoover, assignor to The American Rolling Mill Co.; 3 claims.

PROCESS of treating asphalt to prolong its adhesive life which comprises blowing hot air containing ammonia (0.05 to 10 per cent by volume of gas) upon the asphalt. The purpose is to prevent deterioration during contact with metal articles such as culverts. The ammonia treatment enables a high degree of freedom from unsaturated hydrocarbon material such as wax or grease-like compounds which are responsible for the aging of asphalt.

* * *

Emulsions. No. 2 026 195, issued Dec. 31, 1935; filed Nov. 12, 1934; C. N. Stehr, assignor to Tretolite Co.; 4 claims.

PROCESS for breaking emulsions of the water-in-oil type in which the emulsion is subjected to a substantially anhydrous mixture while oil-soluble, at least in higher concentrations, and comprising the following components: (a) 15 to 50 per cent of blown oil bodies; (b) 2 to 15 per cent of an acid salt or salts of a sulfo fatty acid; (c) 20 to 60 per cent of an unsaponified sulfur-free fatty acid derived by a sulfation process and followed by a hydrolytic decomposition accompanied by the splitting of sulfuric acid; (d) 5 to 25 per cent of an aliphatic monohydric alcohol or alcohols.

* * *

Emulsion. No. 2 023 218, issued Dec. 31, 1935; filed Dec. 31, 1934; M. De Groote and B. Keiser, assignors to Tretolite Co.; 9 claims.

PROCESS for breaking a petroleum emulsion of the water-in-oil type, in which the emulsion is subjected to an agent consisting of a sulfo body derived by sulfonation of an unsaturated acid body produced by thermal decomposition of an unsaturated oxy fatty material.

These include such naturally-occurring materials as ricinoleic acid or its glycoride, castor oil. They are characterized by the presence of an ethylene linkage and also the oxygen-containing hydroxyl radical.

CRUDE OIL MARKETS

*Gulf Coastal Fields

Posted by Humble Oil & Refining Co.

(Effective Jan. 9, 1936)

Below 18	$0.88	26-26.9	$1.06
18-18.9	0.90	27-27.9	1.08
19-19.9	0.92	28-28.9	1.10
20-20.9	0.94	29-29.9	1.12
21-21.9	0.96	30-30.9	1.14
22-22.9	0.98	31-31.9	1.16
23-23.9	1.00	32-32.9	1.18
24-24.9	1.02	33-33.9	1.20
25-25.9	1.04	34 and above	1.22
Refugio heavy			$0.90

Effective Dec. 1, 1934, Humble prices are based on 99% tank tables at 60 F. Allowance or deduction of 1% is made for each 25° change in temperature above or below 60 F.

*Includes these fields: Barbers Hill, Goose Creek, Hull, Humble, Liberty, Moss Bluff, Mykawa, Orange, Pierce Junction, Rabbs Ridge, Raccoon Bend (shallow sand), Refugio light, Sour Lake, Spindletop, Sugarland, and West Columbia.

Above gravity and crude schedule met Jan. 9 by The Texas Co., except that Texas Co. posts $0.92 for below 20. Jan. 9, Sinclair-Prairie met above Humble schedule in full.

Continued from preceding page

Rocky Mountain Fields

Posted by Stanolind Oil & Gas Co.

(Effective Jan. 9, 1936)

Salt Creek, Midway and Dutton Creek, Wyo., same schedule as Stanolind posts in Oklahoma-Kansas which see.

Elk Basin, light	$1.28
Grass Creek, light	1.28
Grass Creek, heavy	0.72
Greybull-Torchlight	1.28
Iles, light, Col	1.06
Iles, heavy	1.00
Hogback, N. M	1.21
Frannie light (Effective Feb. 24, '36)	0.78
Frannie heavy	0.72
Hamilton Dome, Wyo	0.67
Pondera, Mont	1.05

Posted by Ohio Oil Co.

(Effective Jan. 9, 1936)

Elk Basin, Wyo	$1.28
Grass Creek, light and heavy	1.28
Rock Creek	1.12
Big Muddy	1.11
Sunburst, Mont	1.25

Posted by Other Companies

(Effective Jan. 9, 1936)

Cutbank, Mont. (*Internatl. Refg. Co.)	$1.50
Cat Creek, Mont. (Continental Oil)	1.28

*Texas Co. subsidiary.

CALIFORNIA, Posted by Standard Oil of California

All gravities above those quoted take highest price offered in the field. Effective Feb. 25, 1936 except Huntington Beach, Playa del Rey, Santa Fe Springs, Kern Front, Signal Hill (Long Beach) effective Mar. 7, 1936

Gravity	Signal Hill (Long Beach)	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda Brea Canon	Athens Rosecrans	Dominguez	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	‡Newhall and others	Mountain View	Elk Hills	Buena Vista Hills, **Midway-Sunset	Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge
14-14.9	$0.80	0.79	0.74	0.78	0.79	0.80	0.76	....	....	0.80	0.76	0.76	0.77	0.78	....	0.70	....	0.65	0.70	0.65	0.70	0.70	....
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.65	.70	.65	.70	.70	....
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.65	.70	.65	.70	.70	....
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.65	.70	.65	.70	.70	....
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	.82	.76	.76	.77	.78	....	.70	....	.65	.70	.65	.70	.70	....
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	.85	.76	.78	.77	.78	....	.70	0.70	.66	.74	.66	.74	.71	0.70
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	.88	.78	.82	.77	.80	....	....	.70	.68	.78	.68	.78	.72	.70
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	.91	.80	.85	.77	.84	.78	....	.73	.71	.82	.71	.82	.74	.70
22-22.9	.92	.82	.74	.92	.96	.98	.92	....	....	.93	.84	.89	.79	.88	.78	....	.77	.74	.87	.74	.86	.78	.72
23-23.9	.95	.86	.77	.96	.99	1.02	.96	.84	.79	.96	.88	.93	.82	.92	.78	....	.80	.77	.92	.77	.90	.82	.76
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	.99	.91	.96	.85	.96	.82	....	.84	.80	.97	.80	.94	.86	.79
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	1.02	.95	....	.89	.99	.86	....	.88	.83	1.01	.83	.98	.90	.83
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	1.05	.98	....	.92	1.03	.90	....	.91	.86	1.06	.86	1.02	....	....
27-27.9	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	1.02	....	.96	1.06	.95	....	.95	.88	1.10	.88	1.06	....	....
28-28.9	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	1.06	....	.99	1.10	.99	....	.99	.91	1.15	.91	1.10	....	....
29-29.9	1.17	1.15	.93	1.18	1.18	Pipe	1.17	1.12	.93	....	1.09	....	1.03	1.14	1.03	....	1.02	.94	1.20	.94	1.14	....	....
30-30.9	1.21	1.19	.95	1.22	1.21		1.21	1.17	.95	....	....	....	1.07	1.17	1.08	....	1.06	.97	1.25	.97	1.18	....	....
31-31.9				....	1.24		1.24	1.22	.97	....	....	....	1.11	1.21	1.12	....	1.09	.99	1.29	.99			
32-32.9	*Elwood Terrace			....	1.27		1.27	1.27	1.00	....	....	....	1.14	1.25	1.16	....	1.13	1.02	1.34	1.02	Kettleman Hills		
33-33.9	....	1.28	....	....	....		....	1.32	....	....	....	....	1.18	1.28	1.20	....	1.17	1.04	1.38	1.04	....	1.19	....
34-34.9	....	1.32	....	....	....		....	1.37	....	....	....	....	1.22	1.32	1.25	....	1.20	....	....	....	....	1.23	....
35-35.9	....	1.35	....	....	....		....	1.42	....	....	....	....	1.25	....	1.29	....	....	....	....	....	....	1.27	....
36-36.9	....	1.39	....	....	....		....	1.46	....	....	....	....	1.29	....	1.33	....	....	....	....	....	....	1.31	....
37-37.9	....	1.43	....	....	....		....	1.51	....	....	....	....	1.32	....	1.37	....	....	....	....	....	....	1.35	....
38-38.9	....	....	....	....	....		....	1.56	....	....	....	....	1.36	....	1.42	....	....	....	....	....	....	1.39	....
39-39.9	....	....	....	....	....		....	1.61	....	....	....	....	1.40	....	....	....	....	....	....	....	....	1.43	....
40-40.9	....	....	....	....	....		....	1.66	....	....	....	....	1.43	....	....	....	....	....	....	....	....	....	....

F.O.B. Standard Pipe Line

*F.o.b. ship.

‡Also McKittrick, Kern River, Kern Front and Round Mountain $0.70 thru 19.9 gravity; no higher gravity quoted. **Except Lakeview Area.

SEABOARD MARKETS, EXPORT AND COASTWISE

Prices do not include Federal tax. Where $ mark is shown, prices are per barrel of 42 U. S. gallons

Eastern Domestic

(Prices in cents per gallon tank car lots, unless otherwise noted, f.o.b. refinery or seaboard terminal, representing majority of sales and quotations to jobbers and/or consumers. Florida and S. Carolina inspection tax not included.)

*Motor Gasoline

Prices March 16	60-64 Octane	65 Octane and Above
New York harbor	7.00	7.25
New York harbor, barges	6.75	7.00
Philadelphia district	6.75 – 7.00	7.00 – 7.25
Baltimore district	6.75	7.00
Norfolk district	6.75	7.00
Wilmington, N. C. district	6.75	7.00
Charleston, S. C., district	6.75	7.00
Savannah district	6.75	7.00 – 7.25
Jacksonville district	6.75	7.00 – 7.25
Portland district	7.25	7.50
Boston district	7.00	7.25
Boston district, barges	6.75	7.00
Providence district	7.00	7.25
Providence district, barges	6.75	7.00

*Due to lack of companies offering U. S. Motor gasoline, 59 octane and below in the open market, prices for this grade are discontinued. Quotations nominally are 0.25c below those for 60-64 octane grade.

Water White Kerosine

Prices March 16			
New York harbor	5.125– 5.25	Savannah district	5.50 – 5.75
N. Y. harbor, barges	5.00 – 5.125	Jacksonville district	5.50 – 5.75
Philadelphia district	5.25 – 5.50	Portland district	5.50
Baltimore district	5.50	Boston district	5.25
Norfolk district	5.50	Boston dist., barges	5.125
Wilmington, N. C.	5.50	Providence district	5.25
Charleston, S. C., dist.	5.50	Providence, barges	5.125

*Fuel Oils

Prices March 16	New York harbor	New York harbor, barges	Philadelphia district
No. 1	5.125– 5.25	5.00 – 5.125	5.25 – 5.50
No. 2	4.75	4.625	4.75
No. 3	4.75	4.625	4.75
No. 4	4.50	4.375	4.25
No. 5 (per barrel)	$1.25	.....	$1.25
No. 6 (per barrel)	$1.05	.....	$1.05

	Baltimore district	Boston district
No. 1	5.50	5.25
No. 2	4.75	4.75
No. 3	4.75	4.75
No. 4	4.375	4.50
No. 5 (per barrel)	$1.25	$1.25
No. 6 (per barrel)	$1.05	$1.05

	Boston dist., barges	Providence district	Providence dist., barges
No. 1	5.125	5.25	5.125
No. 2	4.625	4.75	4.625
No. 3	4.625	4.75	4.625
No. 4	4.375	4.50	4.375

*Fuel oils meet specifications of U. S. Commercial Standards CS12-35.

	Bunker Oil Grade C Per Barrel	Diesel Oil Ships' Bunkers Per Barrel	Gas Oil 28-34 Gravity Per gallon	Diesel Oil Shore Plants Per gallon
New York harbor	*$1.05	*$1.65	4.75	4.75
Philadelphia dist.	*$1.05	*$1.65	4.75	....
Baltimore district	*$1.05	*$1.65	4.75	....
Norfolk district	*$1.05	*$1.65	4.75	....
Charleston district	$1.00	$1.65	....	....
Savannah district	$1.00	$1.89	....	4.75
Jacksonville dist.	$1.00	$1.995	....	4.75
Tampa district	$1.00	$1.995	....	....
Portland district	$1.15	$1.75	....	....
Boston district	$1.05	*$1.65	....	....
Providence district	$1.05	$1.65	....	....

*Lighterage for bunker oil, 5c per bbl. additional; for Diesel oil, 6.5c per bbl. additional.

Pacific Export

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

Prices—	March 16	March 9	March 2
53-55 U. S. Motor	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
400 e.p. blend 65 Octane and above	5.00 – 6.00	5.00 – 6.00	5.00 – 6.00
38-40 w.w. kerosine, 150 fire point	4.25 – 5.00	4.25 – 5.00	4.25 – 5.00
41-43 w.w. kerosine	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00
44 water white kerosine	5.00	5.00	5.00
Prime wh. kerosine	3.50 – 4.25	3.50 – 4.25	3.50 – 4.25
In Cargo lots, per barrel:			
Diesel fuel oil, above 23.9°	$1.05 –$1.20	$1.10 –$1.20	$1.05 –$1.15
Diesel fuel oil, under 23.9°	$1.00 –$1.15	$1.05 –$1.15	$1.00 –$1.10
30-34 gas oil	$1.05 –$1.15	$1.10 –$1.15	$1.05 –$1.10
Grade C fuel oil	$0.75 –$0.85	$0.75 –$0.85	$0.75 –$0.85
Pacific Export (cont'd)	March 16	March 9	March 2
In Ships' Bunkers, or deep tank lots, per barrel:			
Diesel fuel oil, above 23.9 gravity	$1.125–$1.25	$1.125–$1.25	$1.125–$1.15
Diesel, under 23.9 gravity	$1.025–$1.15	$1.025–$1.15	$1.025–$1.05
Grade C fuel oil	$0.90 –$0.95	$0.90 –$0.95	$0.90 –$0.95
Cased Goods:			
Gasoline, U. S. Motor	$1.40 –$1.50	$1.40 –$1.50	$1.40 –$1.50
Gasoline, 400 e.p. blend	$1.60 –$1.75	$1.60 –$1.75	$1.60 –$1.75
38-40 w.w. kerosine, 150 fire point	$1.15 –$1.30	$1.15 –$1.30	$1.15 –$1.30
Kerosine, prime white	$1.15 –$1.20	$1.15 –$1.20	$1.15 –$1.20

New York Export

(Prices in cents per gallon in barrels, F.a.s. New York)

Cylinder Oils (Pennsylvania Products)

Bright stock:			
Light, 25 pour point	26.00	26.00	26.00
Dark, 25 pour point	25.50	25.50	25.50
Neutral oil:			
200 3 color, 25 pour point	27.50	28.50	28.50
150 3 color, 25 pour point	23.00	24.00	24.00
600 Warren E filtered	20.50	20.50	20.50
600 stm. rfd. unfiltered	17.00	17.00	17.00
650 stm. rfd. unfiltered	18.50	18.50	18.50
600 flash, steam refined	19.50	19.50	19.50
630 flash, steam refined	24.50	24.50	24.50

Wax Domestic *and* Export

(Prices in cents per pound. Tests made by A. S. T. M. methods. Melting points shown below, however, are A. M. P., 3° higher than A. S. T. M. (E. M. P.) melting points. Export prices are f.a.s. carload lots. Domestic prices are f.o.b. refineries in New York and New Orleans districts, in bags, carload lots, with 0.2c discount allowed for shipment in bulk.)

	New York		New Orleans	
Prices Mar. 16	*Domestic*	*Export*	*Domestic*	*Export*
124-6 Y.C. scale	2.50	2.50	2.50	2.50
122-4 W.C. scale	2.50	2.50	2.50	2.50
124-6 W.C. scale	2.50 – 2.60	2.50 – 2.60	2.50 – 2.60	2.50 – 2.60
123-5 Fully refined	4.45	4.125	4.45	4.125
125-7 Fully refined	4.55	4.25	4.55	4.25
128-30 Fully refined	4.80	4.50	4.80	4.50
130-2 Fully refined	5.05	4.75	5.05	4.75
133-5 Fully refined	*5.35	5.25	*5.35	5.25
135-7 Fully refined	*5.60	5.50	....	....

*Shipment either in bags or in bulk.

Gulf Coast

(Prices are f.o.b. ship at Gulf oil terminals representing sellers' opinions except prices specified to the contrary. Prices cover bulk shipments of 20,000 barrels or more, unless otherwise noted.)

Motor Gasoline

For Domestic Shipment

Prices—	March 16	March 9	March 2
59 octane and below	5.625– 5.75	5.625– 5.75	5.625– 5.75
60-64 octane number	6.00	6.00	6.00
65 octane and above	6.125– 6.25	6.125– 6.25	6.125– 6.25

Fuel Oils

No. 1 Fuel oil	3.75 – 3.875	3.75 – 3.875	3.75 – 3.875
No. 2 Fuel oil	3.625	3.625	3.625
No. 4 Fuel oil	3.125	3.125	3.125

*Sale only.

Kerosine

41-43 w.w.	3.875	3.875	3.875

Gasoline

For Export Shipment

U. S. Motor gasoline	5.50	5.50	5.50
60-62, 400 e.p. gasoline	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625
61-63, 390 e.p. gasoline	5.625– 5.75	5.625– 5.75	5.625– 5.75
64-66, 375 e.p. gasoline	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
U.S. Motor, cases (cargoes)	$1.20 –$1.25	$1.20 –$1.25	$1.20 –$1.25
64-66, 375 e.p. cases (cargoes)	$1.25 –$1.30	$1.25 –$1.30	$1.25 –$1.30

Kerosine

44 water white	4.25	4.25	4.25
41-43 water white	3.75 – 3.875	3.75 – 3.875	3.75 – 3.875
41-43 prime white	3.75 – 3.875	3.75 – 3.875	3.75 – 3.875
W.W., cases (cargoes)	$1.15 –$1.20	$1.15 –$1.20	$1.15 –$1.20
P.W., cases (cargoes)	$1.10 –$1.15	$1.10 –$1.15	$1.10 –$1.15

(*Continued on next page*)

SEABOARD MARKETS, EXPORT AND COASTWISE

Prices do not include Federal tax. Where $ mark is shown, prices are per barrel of 42 U. S. gallons

(*Continued from preceding page*)

Prices—	March 16	March 9	March 2
Gas and Bunker Oils			
For Domestic and/or Export Shipment			
*26-30 translucent gas oil	3.125- 3.25	3.125- 3.25	3.125- 3.25
*30 plus translucent gas oil	3.125- 3.25	3.125- 3.25	3.125- 3.25
*30 plus transp. gas oil	3.25	3.25	3.25
Diesel Oil Ships' bunkers	†$1.50	†$1.50	†$1.50
Grade C bunker oil, for ships' bunkers, per bbl	†$0.90	†$0.90	†$0.90
Grade C bunker oil, per bbl. in cargoes	$0.79 -$0.80	$0.75 -$0.80	$0.75 -$0.80
Mexican Crude and Bunker Oils (F.o.b. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid, per bbl	$0.83 -$0.84	$0.83 -$0.84	$0.83 -$0.84
Grade C bunker oil, ships' bunkers, taxes paid, per bbl	$0.90	$0.90	$0.90
Mid-Continent Lubricating Oils (Prices in cents per gallon in bbls. f.a.s. Gulf terminals. In drums and new barrels, 0.5c to 1c higher per gal. in some instances.)			
190-200 vis. D 210 brt. stk	25.50	25.50	25.50
150-160 vis. D. 210 brt. stk:			
0-10 pour point	22.50	22.50	22.50
10-25 pour point	22.00	22.00	22.00
25-40 pour point	21.50	21.50	21.50
150-160 vis. E 210 brt. stock	21.50	21.50	21.50
120 vis. D 210 bright stock	21.00	21.00	21.00
180 vis. No. 3 color neutral oil:			
0-10 pour point	17.25 -17.50	17.25 -17.50	17.25 -17.50
15-30 pour point	16.25 -16.50	16.25 -16.50	16.25 -16.50
200 vis. No. 3 color neutral oil:			
0-10 pour point	17.75 -18.00	17.75 -18.00	17.75 -18.00
15-30 pour point	16.75 -17.00	16.75 -17.00	16.75 -17.00

*Less than ½ of 1% sulphur. †Lighterage 5c per bbl. additional. ‡Nominal.

Mid-Continent Lubricating Oils Cont'd

Prices—	March 16	March 9	March 2
600 s.r. olive green	12.00 -12.50	12.00 -12.50	12.00 -12.50
600 s.r dark green	10.00 -10.50	10.00 -10.50	10.00 -10.50
631 s.r	16.50	16.50	16.50

South Texas Lubricating Oils

(Viscosity at 100° F., pour test 0. Tanker, f.o.b. Gulf oil terminals, for export shipment)

Unfiltered Pale Oils:			
Vis. Color			
100 No. 3	5.50 - 6.00	5.50 - 6.00	5.50 - 6.00
200 No. 3	6.375- 7.00	6.375- 7.00	6.375- 7.00
300 No. 3	7.00 - 7.50	7.00 - 7.50	7.00 - 7.50
500 No. 3½	7.875- 8.50	7.875- 8.50	7.875- 8.50
750 No. 4	9.00 - 9.50	9.00 - 9.50	9.00 - 9.50
1200 No. 4	9.50 -10.00	9.50 -10.00	9.50 -10.00
2000 No. 4	9.75 -10.25	9.75 -10.25	9.75 -10.25
Red Oils:			
Vis. Color			
100 No. 5-6	5.50 - 6.00	5.50 - 6.00	5.50 - 6.00
200 No. 5-6	6.125- 6.75	6.125- 6.75	6.125- 6.75
300 No. 5-6	6.75 - 7.00	6.75 - 7.00	6.75 - 7.00
500 No. 5-6	7.25 - 7.625	7.25 - 7.625	7.25 - 7.625
750 No. 5-6	9.00 - 9.50	9.00 - 9.50	9.00 - 9.50
1200 No. 5-6	9.50 -10.00	9.50 -10.00	9.50 -10.00
2000 No. 5-6	9.75 -10.25	9.75 -10.25	9.75 -10.25

Note: Red oil prices shown above cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shipments per ton of 2240 pounds. British sterling: to U. S. ports, cents per barrel)

	Crude & /or Fuel		Refined Oil & /or Spirits	
Rates—Mar. 16	Last Paid	Owners Ask	Last Paid	Owners Ask
Calif. U.K./Cont.*	18/6	19/-20/	19/6	20/-21/
Gulf-U.K./Cont.*	13/9	14/-14/3	13/9	14/-14/6
Calif.-N. Atlantic (not E. of N. Y.)	....	82c	85c	85c
Gulf-N. Atlantic** (not E. of N. Y.)	†26c	†26-27c	30c	29-30c

Note: Dirty boat quotations are enlarged to cover, "Fuel and Light Crude" quotations.

*Continental ports in range between Bordeaux and Hamburg, both inclusive.

**Venezuela loading same rate: Tampico 2c to 3c per bbl. additional. †Rates for heavy crude or fuel 1c to 2c higher than for light crude.

Chemical Refining Processes

(*Continued from page* 50)

It is not the purpose of this paper to go into a discussion of treating and rerunning equipment but it may be said that aside from the tendency to eliminate or minimize treating as well as rerunning as a separate operation the general principles, operations and apparatus remain practically the same (45) except for very marked improvements in specific methods and apparatus. More efficient mixing and proportioning equipment has been designed for treating as well as in devices for separating sludge acid, such as the desludgers which are packed with solid material showing a preferential wetting by the sludge and permitting more rapid and complete separation of the same. Distillation apparatus has been improved very considerably along the lines of more efficient heat transfer and better temperature control. In this respect, combination units involving steam and vacuum distillation with highly efficient fractionating columns are now extensively employed.

45. See Morrell & Bergman, Chem. & Met. Eng.—April, May and June, 1928, and Morrell, N.P.N. (loc. cit.).

COMING MEETINGS

(*Continued from page* 9)

American Petroleum Institute, mid-year meeting, Mayo Hotel, Tulsa, Okla., May 13, 14, 15.

Natural Gasoline Association of America, Tulsa Hotel, Tulsa, Okla., May 13, 14, 15.

International Petroleum Exposition and Congress, Tulsa, Okla., May 16 to 23.

Independent Petroleum Assoc. of America, Tulsa, May 21.

Virginia Oil Men's Association, Patrick Henry Hotel, Roanoke, Va., May 21.

National Stripper Well Association, Tulsa, May 22.

Pennsylvania Grade Crude Oil Assn., 13th annual meeting, State College, Pa., June 18, 19.

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 29 to July 3.

American Chemical Society, semi-annual meeting, Pittsburgh, Pa., Sept. 7 to 12.

American Petroleum Institute, 17th annual meeting, Chicago, Nov. 9 to 12.

Adopt Convention Program

NEW YORK, March 16.—Speakers who will address the oil burner manufacturers and dealers at the Twelfth National Oil Burner Show in Detroit, April 14 to 18, during the merchandising sessions will include the following: Donald G. Valentine, N. W. Ayer & Son, who will speak on "Market Analysis; Ralph Beale, Norge Corporation, on "Salesmanship," and W. C. Wood, Timken Silent Automatic Company, on "Financing."

Gar Wood, Gar Wood Industries, Inc., will be the principal speaker at the annual banquet on April 17. R. S. Bohn, Preferred Utilities Manufacturing Corp., will act as toastmaster.

Organize N. D. Associations

MINNEAPOLIS—A Federation of North Dakota State Associations is being organized, North Dakota jobbers have been informed in a Northwest Petroleum Association bulletin. The jobbers' organization has participated in forming the new association. The federation consists of representatives of various business and professional organizations.

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(Indiana)

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For the past several years, motorists in the East and in the South have been familiar with "the ESSO sign". This big red, white and blue ESSO oval has marked the source of fine products and courteous service at more than 30,000 ESSO STATIONS and ESSO DEALERS from Maine to Louisiana.

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Oil Equipment Headquarters Dubuque, Iowa

NEW PATENTS

Prepared by R. E. Burnham, patent and trade-mark attorney, 511 Eleventh street, N. W., Washington, D. C., from whom copies may be obtained at the rate of 25c each. State number of patent and name of inventor when ordering.

February 18, 1936

MISCELLANEOUS

Method of lubrication and lubricant therefor. Walter D. Hodson, Chicago, Ill. Filed Apr. 6, 1934. No. 2,031,368.

Fuel (compression ignition). Carl S. Marvel, Urbana, Ill., assignor to E. I. du Pont de Nemours & Co. Filed Jan. 21, 1933. No. 2,031,497.

Tank for storage of liquids, especially hydrocarbons. Askan W. Syndergaard, Copenhagen, Denmark. Filed July 13, 1934. No. 2,031,553.

February 25, 1936

REFINING

Conversion of hydrocarbons. James P. Daugherty, Jr., Woodbury, N. J., assignor to Houdry Process Corp. Filed Feb. 10, 1933. No. 2,031,591.

Control of catalytic reactions. James W. Harrison and Thomas B. Prickett, Woodbury, N. J., assignors to Houdry Process Corp. Filed May. 18, 1932. No. 2,031,600.

Apparatus for fractional distillation. Frank L. Maker, Berkeley, Calif., assignor to Standard Oil Co. (Calif.) Filed Apr. 25, 1932. No. 2,031,610.

Method of treating hydrocarbons. Theodore R. Donlan, Irvington, N. J., assignor to Standard Oil Development Co. Filed Feb. 26, 1932. No. 2,031,939

Destructive hydrogenation. Stephen A. Kiss, Brooklyn, N. Y., assignor to Standard-I. G. Co. Filed July 24, 1931. No. 2,031,961.

Sweetening process. Franz R. Moser, Amsterdam, Netherlands, assignor to Shell Development Co. Filed June 20, 1932. No. 2,031,972.

Conversion of hydrocarbons. Frederick W. Sullivan, Jr., Hammond, Ind., assignor to Standard Oil Co. (Ind.) Filed Sept. 13, 1934. No. 2,031,987.

Solvent recovery device (for separating solvent from sludge). George A. Mott and Colin C. Jones, Santa Monica, Calif. Filed Dec. 11, 1934. No. 2,032,299.

Gasoline manufacturing process. Joseph K. Roberts and Morris T. Carpenter, Hammond, Ind., assignors to Standard Oil Co. (Ind.) Filed Mar. 30, 1934. No. 2,032,330.

MISCELLANEOUS

Method of inhibiting gum formation in naphthas and products obtained thereby. Car Winning, Leonard E. Sargent, and James F. Dudley, Elizabeth, N. J., assignors to Standard Oil Development Co. Filed Apr. 24, 1931. No. 2,031,917.

Stabilized refined mineral, vegetable, and animal oils. Hyym E. Buc, Roselle, N. J., assignor to Standard Oil Development Co. Filed Apr. 21, 1932. No. 2,031,930.

Rubber composition containing petroleum resins. Per K. Frolich, Ro-

selle, N. J., assignor to Standard Oil Development Co. Filed Sept. 2, 1932. No. 2,031,944.

Impregnation of wood. Charles W. Mudge, Cranford, N. J., assignor to Standard Oil Development Co. No. 2,031,973.

Improved lubricants and process for manufacturing. Reginald K. Stratford and Jack L. Huggett, Sarnia, Ont., Canada, assignors to Standard Oil Development Co. Filed July 16, 1931. No. 2,031,986.

Fuels for internal-combustion engines. Samuel Whyte, Redhill, England. Filed Jan. 11, 1934. No. 2,032,-242.

Treatment of lubricating oils. Allan A. Griffith and William Helmore, South Farnborough, England, assignors to C. C. Wakefield & Co. Ltd., London, England. Filed Nov. 9, 1934. No. 2,032,279.

March 3, 1936

REFINING

Desulphurizing gasoline. John M. McGee and Robert M. Roe, Casper, Wyo., assignors to Standard Oil Co. (Ind.). Filed Jan. 9, 1930. No. 2,032,662.

Stabilization of light hydrocarbon oils and particularly pressure distillate. Joseph K. Roberts, Hammond, Ind., assignor to Standard Oil Co. (Ind.). Filed Jan. 6, 1930. No. 2,032,666.

Cracking apparatus and method of operating same. Donald L. Jacobs and Eddie M. Dons, Tulsa, Okla., assignors to Mid-Continental Petoleum Corp. Filed Oct. 10, 1932. No. 2,032,846.

Process of converting gasoline of low antiknock rating to gasoline of high antiknock rating. Cornelius B. Watson, Chicago, Ill., assignor to Pure Oil Co. Filed Sept. 23, 1930. No. 2,032,861.

Cracking hydrocarbon oils. Jean D. Seguy, Chicago, Ill., assignor to Universal Oil Products Co. Filed Jan. 31, 1930. No. 2,032,892.

Method of fractionally distilling and desulphurizing crude oil. Clyde L. Smith, Chicago, Ill., and Weldon G. Annable, Linwood, Pa., assignors to Pure Oil Co. Filed Dec. 31, 1932. No. 2,-032,896.

Method of removing wax haze from an oil. Rhea N. Watts and John McA. Harris, Jr., Baton Rouge, La., assignors to Standard-I. G. Co. Filed Dec. 27, 1933. No. 2,033,057.

MISCELLANEOUS

Compound for treating petroleum. James E. Cox, Oakland, Calif. Filed Oct. 29, 1934. No. 2,032,527.

Stabilization of mineral oil compositions. Thomas W. Bartram, Nitro, W. Va., assignor to Monsanto Chemical Co. Filed May 17, 1932. No. 2,032,787.

Taxes on Oil

NEW YORK, March 7.—Nearly 11 per cent of all tax revenue collected in the United States is obtained from the petroleum industry and its customers, according to information in "Petroleum Taxation", a new book published by the American Petroleum Industries Committee. The petroleum industry's investment represents only four per cent of the national wealth, it reported.

The estimate shows the 1935 petroleum tax bill as $1,127,259,000, or an average of $1.14 per barrel. This includes payments of 201 different types of taxes, of which 39 are federal, 121 state and 41 local, it was stated.

Philadelphia Distributor To Sell Oil Burners

PHILADELPHIA—Joseph M. Patterson & Co., Inc., one of the largest independent distributors of fuel oils in the eastern Pennsylvania and southern New Jersey territory has added an oil burner division under the supervision of C. H. Evans.

The company has exceptionally good facilities for rendering a complete heating oil service. It brings in its supplies by tank vessel to Philadelphia Harbor where it has a storage capacity of approximately 36,000,000 gallons. The company also owns and operates its own barges for distributing oil from the ocean terminal to a number of focal points from which tank truck deliveries are made by its own fleet to customers.

The oil burner division staff is trained to efficiently handle the sale and installation of Master Craft oil heating equipment.

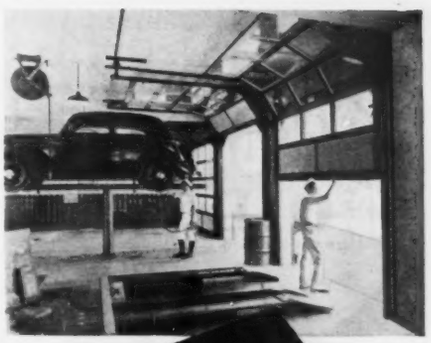
Britain's "Gas" Demand Up 625% In 15 Years

WASHINGTON, Mar. 10.—How great an increase in gasoline consumption has taken place in Great Brtain during the past few years is indicated in figures reported by the American consulate-general at London to the Department of Commerce here.

In 1935, consumption totaled 1,-315,453,000 gallons, compared with 1,-211,454,000 gallons in 1934, an increase of 103,999,000 gallons or 8.5 per cent. In 1925 (10 years ago) consumption was 486,960,000 gallons and in 1920 it was 181,873,000 gallons. Demand in 1935, therefore, indicated an increase of 828,493,000 gallons over 1925, or 170 per cent, and an increase of 1,133,580,000 gallons, or 623 per cent, over 1920.

This compares with a domestic demand for motor fuel in the United States in 1935 of 18,167,352,000 gallons, according to the U. S. Bureau of Mines, as against 17,098,452,000 gallons in 1934, an increase of 1,068,-900,000 gallons, or 6.2 per cent. In the 15-year period, consumption in the U. S. increased 13,916,616,000 gallons, or 327 per cent, Great Britain's rate of increase being twice that of the United States in that period.

Prior to the World War, the consul points out, mostly all of Great Britain's petroleum needs were imported in the refined state. Now these supplies are supplemented by large quantities of gasoline refined within its own borders from imported crude oil, coal and Scottish shale oil.



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Warren, Pa.

Taxed Gasoline Demand in 1935

17.5 Billion Gallons

NEW YORK, March 13

AN ALL-TIME high in gasoline consumption was reached in the United States in 1935, with every state showing an increase, when tax reports, filed by gasoline wholesalers and dealers, revealed that 17,632,143,000 gallons had been consumed, according to the American Petroleum Institute.

This represents an increase of 1,044,787,000 gallons over 1934, or 6.30 per cent. Compared with the boom year, 1929, consumption in 46 states and the District of Columbia totaled 12,549,564,000 gallons, with the two large consuming states of Illinois and New York, however, missing, since they had no taxes then.

Changes in the various years over each previous year, back to 1929, by percentages were: in 1934, increase 7.63 per cent; 1933, decrease, 0.16; 1932, decrease, 7.26; 1931, increase, 4.1; 1930, increase 6.0; and 1929, increase 12.3 per cent.

Increases the past year by the various sections of the country were: New England states, 4.85 per cent; middle Atlantic, 6.04; southeastern, 9.60; middlewestern (12 states, including Ohio), 6.81; southwestern, 5.86; Rocky Mountain, 10.24 per cent; and Pacific Coast, 8.43 per cent.

In December consumption increased 92,645,000 gallons, or 7.24 per cent, over consumption in December, 1934. Compared with November, 1935, daily average consumption decreased 5,453,000 gallons in December, to 44,248,000 gallons. Over the December, 1934 demand, however, this is a gain of nearly 3,000,000 gallons.

Detailed figures are given in the accompanying table.

Gasoline Consumption By States In 1935

(Figures in Thousands of Gallons)

	Month of			% Change	12 Months Ended With			% Change
	Nov. 1935	Dec. 1935	Dec. 1934	1935 over 1934	Dec. 1935	Dec. 1934		1935 over 1934
Alabama	15,293	14,664	13,345	+9.88	172,477	155,047		+11.24
Arizona	7,254	7,333	6,313	+16.16	80,994	73,219		+10.62
Arkansas	13,323	13,057	11,004	+18.66	143,379	140,156		+2.30
California	122,809	114,839	111,920	+2.61	1,480,008	1,334,177		+10.93
Colorado	14,696	14,548	12,078	+20.45	184,442	172,756		+6.76
Connecticut	22,077	21,156	19,440	+8.83	269,399	254,933		+5.67
Delaware	4,004	3,463	3,259	+6.26	45,104	41,556		+8.54
Dist. of Col.	9,666	9,330	8,568	+8.89	112,540	103,734		+8.49
Florida	22,789	25,469	23,605	+7.90	263,010	236,775		+11.08
Georgia	23,479	22,161	20,406	+8.60	264,618	239,498		+10.49
Idaho	5,859	5,198	4,304	+20.77	72,352	65,770		+10.01
Illinois	90,098	84,116	71,604	+17.47	1,069,243	1,025,918		+4.22
Indiana	43,544	38,008	36,716	+3.52	496,835	465,438		+6.75
Iowa	35,825	31,700	32,840	—4.71	421,152	403,803		+4.30
Kansas	27,751	29,231	26,955	+8.44	409,941	378,781		+8.23
Kentucky	17,434	15,928	14,842	+7.32	201,325	184,367		+9.20
Louisiana	17,221	16,486	16,038	+2.79	185,851	178,457		+4.14
Maine	9,795	8,144	7,816	+4.20	120,879	116,993		+3.32
Maryland	18,600	17,200	16,577	+3.76	217,266	206,279		+5.33
Massachusetts	51,971	47,201	45,440	+3.87	612,557	587,789		+4.21
Michigan	77,180	63,379	54,539	+16.21	862,367	781,971		+10.28
Minnesota	38,594	30,891	28,115	+9.87	456,444	431,545		+5.77
Mississippi	13,271	12,191	10,805	+12.83	147,335	131,263		+12.24
Missouri	42,745	42,234	36,261	+16.47	509,061	489,401		+4.02
Montana	7,218	6,300	5,238	+20.27	96,326	85,484		+12.68
Nebraska	19,661	17,115	14,971	+14.32	226,673	223,372		+1.48
Nevada	2,046	1,880	1,853	+1.46	26,541	24,707		+7.42
New Hampshire	5,718	5,033	4,700	+7.08	73,904	70,640		+4.62
New Jersey	62,870	56,123	58,920	—4.75	735,771	734,521		+0.17
New Mexico	5,306	5,100	4,877	+4.57	62,340	56,154		+11.02
New York	134,342	123,902	120,675	+2.67	1,610,544	1,569,195		+2.63
North Carolina	28,899	26,416	25,935	+1.85	309,800	279,796		+10.72
North Dakota	8,561	5,711	6,258	—8.74	120,077	102,931		+16.66
Ohio	86,198	76,610	71,503	+7.14	1,014,926	955,470		+6.22
Oklahoma	26,841	27,548	22,857	+20.52	327,551	300,431		+9.03
Oregon	14,966	13,610	11,808	+15.26	183,005	165,978		+10.26
Pennsylvania	98,928	92,558	90,126	+2.70	1,171,438	1,136,344		+3.09
Rhode Island	10,082	8,666	8,096	+7.04	114,786	108,864		+5.44
South Carolina	12,969	11,870	11,925	—0.46	114,729	132,347		+9.36
South Dakota	8,807	7,870	7,922	—0.66	118,967	109,514		+8.63
Tennessee	19,439	18,406	15,016	+22.58	224,355	212,037		+5.81
Texas	80,138	79,642	74,505	+6.89	942,268	875,034		+7.68
Utah	5,991	5,885	4,486	+31.19	71,121	64,140		+10.88
Vermont	4,416	3,625	3,316	+9.32	51,388	48,550		+5.84
Virginia	24,683	22,346	20,294	+10.11	282,436	259,123		+9.00
Washington	21,601	20,435	19,039	+7.33	273,586	260,778		+4.91
West Virginia	13,838	11,593	11,700	—0.91	159,090	147,609		+7.78
Wisconsin	38,531	31,921	27,234	+17.21	442,444	420,725		+5.16
Wyoming	3,703	3,585	2,988	+19.98	49,498	43,986		+12.53
Total	1,491,030	1,371,677	1,279,032	+7.24	17,632,143	16,587,356		+6.30
Daily Avg.	49,701	44,248	41,259	+7.24	48,307	45,445		+6.30
Change from previous year: Total increase	.....	+92,645	.....		+1,044,787	.....		
Percentage Change in Daily Average	.....	+7.24%	.....		+6.30%	.....		

Polarized Headlights Make Night Driving Safer

Polaroid, an inexpensive light-polarizing glass, was recently introduced to the public for the first time. The glass has the property, when two parallel plates are used together, of permitting any degree of light intensity to pass through dependent upon the angle at which they are held.

They suggest a valuable use in glare reduction from automobile headlights, providing headlight lenses and windshields are made of the material, it is said. The light from headlamps would not be entirely cut off but would appear merely to glow with a dim violet hue. Surrounding objects at the same time would be seen in their natural colors and appear in full illumination.

The principals involved have been long known in the laboratory. Tourmaline tongs have been used for classroom demonstration and the principle is employed in scientific instruments. Prohibitive cost has been the reason for lack of more general use.

Polaroid glasses for protection against sun glare are to be introduced shortly by a large optical concern, it was announced. Use of the material in headlamps and glasses would also solve the glare problem. The wearer would discover changes in light intensity merely by tilting his head to one side, if the principle holds for such great distances between the two polarizing glasses.

In application, the glass is laminated with a film of the polarizing material between two layers of glass.

Pocahontas Will Sell Hi-Speed Gasoline

CLEVELAND, March 13—As a result of a closer tie-up between Pocahontas Oil Corp., Cleveland, and the Hickok Oil Corp., Toledo, the local corporation will distribute Hi-Speed gasoline, produced by Hickok, under the name of Hi-Speed Blue Flash. Blue Flash was the trade name of the gasoline formerly marketed by Pocahontas. Formal announcement of the change in operation of Pocahontas was made by W. E. Minshall, president. The corporation will inaugurate an aggressive advertising campaign to introduce the new motor fuel to the Cleveland area, he said.

At the same time it was announced that W. E. Minshall, formerly chairman of the board, had been elected president to fill the vacancy created by the recent resignation of Douglass S. Campbell.

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Pyroil has kept pace with the steady improvement in automobile manufacture: the use of alloy metals in bearings and pistons. Pyroil keeps abreast of improvements in lubricant refining processes. It is not just a "graphite oil," although it contains an exact balanced quantity of truly colloidal graphite. It is not just a "break-in" oil: it does not accelerate wear. *Its color is now a dark wine red.*

When you service this internationally famous product, you gain by securing new customers and increased business in other departments—built on Pyroil's good will and satisfaction-giving influence.

One service station writes us:
"This is the end of the first week with PYROIL and I have seen many new faces drive into the station. In fact we think of Pyroilizing another tank."

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Pyroil is nationally advertised in Sat. Eve. Post and 25 other nationally circulated publications. Manufactured and Guaranteed by Pyroil Company, W. V. Kidder, Founder, 969 LaFollette Ave., LaCrosse, Wis., U. S. A.

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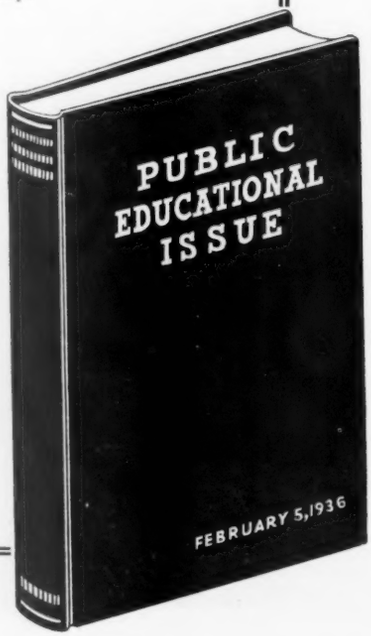


November "Gas" Demand Up 0.35% in Canada

OTTAWA, March 13—An increase of 166,000 gallons, or 0.35 per cent, in gasoline consumption was indicated in November last year in Canada, over November a year ago, according to the Transportation Branch of the Dominion Bureau of Statistics.

The Prairie Provinces showed declines ranging from 11.18 per cent in Manitoba to 31.80 per cent in Saskatchewan. All other provinces reflected increases, ranging from 1.35 per cent in Ontario to 16.70 per cent in Quebec.

In the 11 months ended November, 1935 consumption totaled 536,494,000 Imperial gallons, an increase of 36,407,000 gallons, or 7.18 per cent, over demand in the corresponding period of 1934.

Figures by provinces are:

(In Thousands of Imperial Gallons)

	Nov. 1935	Nov. 1934	% Change 1935 over 1934
Pr. Ed. Island	268	257	+ 4.28
Nova Scotia	2,025	1,820	+11.26
New Brunswick	1,333	1,198	+11.17
Quebec	9,100	7,798	+16.70
Ontario	22,939	22,643	+ 1.35
Manitoba	2,257	2,541	—11.18
Saskatchewan	2 250	3,299	—31.80
Alberta	3,106	4,067	—23.63
Br. Columbia	3,744	3,233	+15.81
Total, Canada	47,022	46,856	+ 0.35

1935 Air Traffic Heavy

WASHINGTON, March 14.—All records for airplane transportation, both of passenger and mail, were broken in 1935, according to the U. S. Post Office Department.

Over 860,000 passengers were carried by domestic air transports in 1935, producing a revenue of $15,800,000. This is a gain over 1934 of 53 per cent in passengers and of 83 per cent in revenue. Most of the companies, however, were still operating without any net profit, the department points out.

Expressage carried totaled 5,500,000 pounds and mail, 13,500,000 pounds, a gain of 53 per cent and 73 per cent respectively over 1934.

Issues Inshippers Supplement

MINNEAPOLIS—The quarterly supplement to the revised list of inshippers of petroleum products into Minnesota and North Dakota has been issued by the Northwest Petroleum Association. The association revised the lists and issued them in loose leaf form on Dec. 1, and issues revised supplements quarterly.

I. C. C. Approves Six Oil Rate Reductions

WASHINGTON—Nine applications for reductions in railroad rates on petroleum and its products to meet truck and water competition have come before the Interstate Commerce Commission in February and March.

Six of the applications have been approved, two denied and one is still pending at this writing.

The approved reductions follow:

A change in rate on gasoline from Hopewell, Va., to Greenville, N. C., from 28 cents to 20 cents per 100 pounds, to meet motor truck competition. The applicants reported that rates had earlier been reduced from Norfolk and Wilmington, N. C., to Greenville, and that faced with this rail competition as well as truck competition, Hopewell shipments had been gradually diminishing. The 20-cent rate is on the same general basis as the reduced rates from Norfolk and Wilmington, they said.

Reduction in rates on petroleum products from Pensacola, Fla., to Hartford, Ala., from 28 cents to 21 cents to meet motor truck competition. The rate was 21 cents until Feb. 14 when it was cancelled and the applicants sought and gained a restoration to the 21 cent level.

A reduction in rates on petroleum products shipped from New Haven to Renfrew, Mass., on the New York, New Haven and Hartford in order to meet truck competition. The new rate is 15 cents per 100 pounds.

A cut in rate from 14 cents to 12½ cents per 100 pounds on petroleum fuel oil shipped from Chester-Marcus Hook, Pa., and Philadelphia to East Long Branch, N. J., on the Pennsylvania and the Reading. The applicants told the commission that a shipper at Chester had just contracted to furnish four and a half million gallons of fuel oil to consumers in East Long Branch and that all of that traffic would go to trucks unless the reduction were allowed.

A reduction in rates on petroleum grease or greases having a petroleum base, and lubricating oil and fuel oil shipped from Anderson, S. C. to southern points, from third class to fifth class. The applicants reported that these commodities were moving by trucks and would continue to do so unless the fifth class rates were prescribed.

Application of a reduced 10-cent rate on petroleum crude oil between Lima, Ohio, and Detroit, over the lines of the B. & O., Toledo, and CRR, and the B. & O., Toledo and T.S.L. RR.

The applications for reductions which were denied by the Commission follow:

The Pennsylvania, the B. & O., and the Western Maryland roads united to ask a reduction in rates on gasoline and kerosine shipped from Baltimore to points in Maryland, Virginia and the District of Columbia, from 9 cents to 6 cents per 100 pounds to meet motor truck competition. They reported that shippers in Baltimore had signed contracts to furnish 27,000,000 gallons and that trucks were offering a rate of 5½ cents and would get all the traffic unless the reduction were allowed. It was denied.

A reduction of rates on gasoline and kerosine shipped from Charleston, S. C. to North Carolina points was asked. The applicants reported that intrastate reductions had been established from Wilmington, N. C., to Fayetteville, N. C. and beyond to meet truck competition. Therefore, they argued, it was necessary to reduce the Charleston rates to the same points to maintain the normal scale relationship to the Wilmington rates. The commission didn't see it that way.

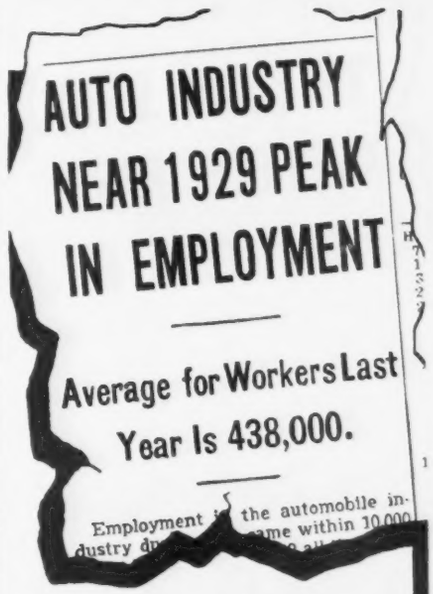
The ICC is still considering the application of various roads for reductions in rates on asphalt shipped from Louisiana points to Pensacola, Fla. The proposed rates would violate the fourth section of the ICC Act, that is by charging less for a long haul than for an intermediate shorter one and the application is before the Fourth Section Division for action. The reduction is sought to enable shipments for a big paving job in Pensacola, the applicants report. There is water competition to be met. The proposed rate is 17½ cents.

Oil Inshipment Report Issued for Nebraska

LINCOLN—The annual statistical survey of inshipments of refined petroleum products into Nebraska for 1934 and 1935 has been issued by C. M. Sutherland & Sons, 1017 Terminal Bldg., Lincoln.

The report is in three sections. The first section lists all inshipments of gasoline into the state for the two years, the listings being by cities and towns. The second section gives deliveries by motor transport. The third section is a register of Nebraska marketers, including dealers, containing 4000 names, and the various types of merchandise sold at service station.

This is the seventh annual report issued by the Sutherland firm, and contains 180 pages.



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TRANSACTIONS IN OIL STOCKS ON NEW YORK STOCK EXCHANGE

1935 High	1935 Low	1936 High	1936 Low	Listed Shares	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended March 14 Sales Shares	High	Low	Last	Week's Change
80	48½	125	75	788,675	N.P.	Amerada Corp.	50cQ	Jan. 31, 36	22,200	*125½	102½	120	+11
44	29¾	51¼	43	2,290,412	$25	Associated Oil Co.	20c	Dec. 31, 35	90	48½	45¾	48⅜	+ 2⅜
28	20½	34	27⅛	2,696,652	25	Atlantic Refining Co.	25cQ	Mar. 16, 36	22,500	32¼	30¼	31	— 1⅛
14¾	5¼	18¾	14⅜	2,258,779	5	Barnsdall Corp.	20c	Feb. 1, 36	31,400	17½	15⅞	16⅜	— ⅛
9⅞	6¾	18¾	8¼	1,444,970	N.P.	Colonial Beacon Oil Co.	....	.....	850	*18¾	16	18	+ ¼
12¼	6½	15¼	11⅞	13,996,072	N.P.	Consolidated Oil Corp.	25c	Oct. 10, 35	140,600	15	14	14⅜	— ⅜
112½	108½	105½	101	132,771	$100	do pfd	$1.25Q	Mar. 15, 36	100	*105½	105½	105½	+ ½
35	15⅛	38½	33¾	4,722,652	5	Continental Oil Co.	25c	Jan. 31, 36	41,500	37⅛	33½	34½	— 2⅜
22½	11¾	34¾	22	413,333	$10	General Asphalt Co.	....	.....	11,500	33⅛	30⅜	31½	— 1⅝
17¾	9½	....	....	95,841	100	Houston Oil Co.	....	.....	.....	....	....	....	....
7	1½	12¼	6¾	678,234	25	do v.t.c.	....	.....	91,600	12¼	10¾	11⅜	— ¼
5¼	2⅛	8⅜	4¾	1,207,132	10	Indian Refining Co.	....	.....	500	7	6⅝	6¾	+ ¼
1⅞	⅜	....	....	1,309,060	N.P.	Louisiana Oil Ref'g. Corp.	....	.....	.....	....	....	....	....
15	4½	17⅛	13	40,000	$100	do pfd	....	.....	270	15½	14¾	14¾	— ¼
3	1	5¼	2¼	330,000	N.P.	Maracaibo Oil Exploration Co.	....	.....	26,500	5¼	4½	5¼	+ ⅜
20½	9½	22	19¾	1,857,912	$10	Mid-Continent Pet. Corp.	25c	Dec. 2, 35	17,000	20⅜	18¼	19¾	+ ⅛
14¼	9¼	17½	13½	6,563,377	N.P.	Ohio Oil Co.	15c	Dec. 14, 35	22,600	16¾	15⅜	16	— ⅜
21	10¾	20⅝	17	4,699,885	$5	Pan Amer. Pet. & Transp. Co.	....	.....	.....	....	....	....	....
1⅞	½	3⅝	1⅜	199,370	N.P.	Panhandle Prod. & Ref'g. Co.	....	.....	2,500	3	2⅜	2⅜	— ¼
20	6½	34	18½	17,994	$100	do pfd	....	.....	300	31¾	29	29	— 1
14	7⅝	18	13¾	2,153,444	5	Petroleum Corp. of America	33c	Oct. 31, 35	12,800	17¾	16⅝	17	— ⅝
40	13¾	45⅜	38½	4,439,450	N.P.	Phillips Petroleum Co.	25cQC	Feb. 29, 36	30,300	43⅞	41¼	42⅜	— 1½
1¼	¼	2¼	⅞	1,184,817	$25	Pierce Oil Corp.	....	.....	.....	....	....	....	....
8	2¼	17	8	150,000	100	do pfd	....	.....	2,200	14½	12⅜	13	— 1¼
1¾	⅝	2½	1½	2,500,000	N.P.	Pierce Petroleum Corp.	....	.....	19,500	2⅜	2	2	— ¼
13	6½	15¼	11⅞	1,050,000	$5	Plymouth Oil	25cQ	Mar. 30, 35	12,300	14⅞	13⅞	14¼	— ⅝
17	5⅞	21½	16⅝	3,038,370	N.P.	Pure Oil Co.	....	.....	133,700	24⅛	21½	23¼	+ ½
103	34¾	115	102⅞	167,640	100	do 6% pfd	....	.....	2,000	114⅛	113	114	+ 1
119⅞	49⅝	130¾	115	130,000	$100	do 8% pfd	....	.....	1,130	*130¾	129	130¼	+ ¼
48½	29½	57	48¾	425,342	a	Royal Dutch Co. (N. Y. shares)	$1.70	Aug. 1, 35	600	53½	52¾	52¾	— 1¼
36⅞	20¾	38½	33¼	1,244,383	N.P.	Seaboard Oil of Del.	25c	Mar. 14, 36	80,700	43⅝	36⅜	42	+ 5⅜
39	20¾	45	38½	56,148	£2	Shell Transport & Trading Co.	$1.237	July 24, 35	30	*45	45	45	+ 1½
16½	5½	19¼	15¼	13,070,625	N.P.	Shell Union Oil Corp.	....	.....	32,700	18⅞	17	18½	— ½
111	63⅛	120	110½	400,000	$100	do pfd. w.w.	....	.....	1,200	119	116	116	— 1
18¾	4¾	6¼	5	461,000	10	Simms Petroleum Co.	**$1.00	Jan. 27, 36	7,000	5⅜	5⅛	5⅛	0
20½	6½	28⅛	19½	1,100,069	25	Skelly Oil Co.	....	.....	13,500	*28⅛	25	28⅛	+ 1⅞
116¼	60	119½	116	120,000	100	do pfd	....	.....	600	115	113½	113½	— ¼
15¾	10⅝	17	14½	31,701,348	15	Socony Vacuum Oil Co.	20c	Mar. 16, 36	115,000	16	14¾	15⅛	— ⅝
116	111	113½	112½	764,925	100	S. O. Export Corp. pfd.	$2.50S.A.	June 29, 35	900	113	112	112	— ⅜
41½	27¾	47⅝	39⅛	13,102,900	N.P.	S. O. California	30c	Mar. 16, 36	35,500	46⅞	43⅝	44⅞	— ¾
33⅜	23	40⅛	32¾	15,215,677	$25	S. O. Indiana	25c	Mar. 16, 36	41,700	39¼	36⅛	38	— ¼
32	20	30	28⅛	146,542	10	S. O. Kansas	50c	Oct. 31, 34	400	28⅝	27	27	— 1½
52⅜	35¾	66⅝	51⅛	25,740,965	25	S. O. New Jersey	75c	Dec. 16, 35	210,900	*66⅝	59⅛	66¼	+ 4¼
77	60½	91	72	1,590,406	N.P.	Sun Oil Co.	25cQ	Mar. 16, 36	3,900	*91	86	89¼	+ 3¼
121	115½	122	118	100,000	$100	do pfd.	$1.50Q	Mar. 2, 36	160	122	120	122	+ 1½
3½	1⅝	6¾	3	966,979	$1	Superior Oil Corp. (Del.)	....	.....	248,700	*6¾	5	6½	+ 1½
30¼	16½	39	28⅞	9,851,236	$25	The Texas Corp.	25cQ	Jan. 1, 36	47,000	38⅜	'35¾	36	— 1¾
9¼	3¼	15¼	7⅞	930,570	10	Texas Pacific Coal & Oil Co.	....	.....	44,300	13¾	11⅝	13½	+ ⅝
15⅞	7⅝	19⅞	14¾	5,998,919	N.P.	Tide Water Associated Oil Co.	25c	Jan. 15, 36	31,700	18⅝	17½	18⅜	+ ⅛
104½	84	106½	100⅝	695,503	$100	do pfd. C. T. V.	$1.50	Jan. 15, 36	1,100	106½	104⅝	105	0
48	26¾	60	52	2,191,823	N.P.	Tide Water Oil Co.	50c	Dec. 31, 35	50	*60	60	60	+ 1½
24	14¼	28⅛	23¼	4,386,070	25	Union Oil of California	25cQ	Feb. 10, 36	16,200	28½	26¼	27⅜	— ⅛
26½	20¼	31⅝	22⅝	1,200,000	N.P.	Union Tank Car Co.	30cQ	Mar. 2, 36	2,000	30	28½	29½	— 1
1⅝	⅝	2⅞	1⅛	759,538	N.P.	Warner Quinlan Co.	....	.....	6,600	2⅞	2¼	2⅜	— ⅛
3⅜	1	4⅝	2¾	431,443	$5	H. F. Wilcox Oil & Gas Co.	....	.....	3,200	3⅛	3½	3⅜	— ⅛

*New high. †New low. x Ex-div. **Dividends of liquidation. ‡Stock dividend. a Par 33 1/3 florins.
C Paid 25c extra Feb. 20, 36.

STANDARD OIL STOCKS ON NEW YORK CURB MARKET

1935 High	1935 Low	1936 High	1936 Low	Shares Issued	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended March 14 Sales Shares	High	Low	Last	Week's Change
16	6	18	13½	36,000	$25	Borne Scrymser Co.	50c	Oct. 15, 35	250	17	15	17	— 1
42½	30½	50	39¾	200,000	50	Buckeye Pipe Line Co.	75cQ	Mar. 14, 36	250	45½	44½	45	0
157	115	124¾	117½	120,000	25	Chesebrough Mfg. Co.	$2.00	Dec. 27, 35	300	122	119	119	— ¼
23¾	10	34¾	19⅞	5,977,873	N.P.	Creole Petroleum Co.	20c	Dec. 31, 35	23,200	31⅞	29¼	30¾	— 1¼
38	33¼	44	39	50,000	$50	Eureka Pipe Line Co.	$1Q	Feb. 1, 36	.....	....	....	....	....
64	44	76½	62½	8,968,479	N.P.	Humble Oil & Refg. Co.	25cQ	Dec. 26, 35	15,800	*76½	70	74⅜	+ 2⅛
22½	15⅝	24½	20	26,919,871	N.P.	Imperial Oil Ltd.	‡25cS.	Dec. 2, 35	20,500	23⅝	21⅛	21⅝	— 1⅛
22½	15⅞	24⅝	20⅛		N.P.	do registered	25cQ	June 1, 34	700	22⅝	22½	22⅝	— ⅛
6¼	3⅝	9¼	5½	300,000	$10	Indiana Pipe Line Co.	20c**	Nov. 15, 35	600	7¾	7⅛	7⅛	— ⅝
39⅝	28	39⅝	33½	14,324,088	N.P.	International Pet. Co.	‡75c S.	Dec. 2, 35	14,100	37⅝	35¾	35⅞	— ⅝
10⅝	6¾	15¾	10¼	509,000	$12.50	National Transit Co.	35c	Dec. 15, 34	700	13	12¼	12⅞	— ⅛
4⅞	3	6¼	4½	100,000	5	New York Transit Co.	15c S.A.	Oct. 15, 34	100	5⅞	5⅞	5⅞	— ⅛
8	5¼	9¼	7	120,000	10	Northern Pipe Line Co.	25c S.A.	Jan. 2, 35	400	7⅞	7⅜	7½	— ½
107¼	90¼	109¼	104½	562,122	100	Ohio Oil Co. pfd.	$1.50Q	Mar. 14, 36	900	108¾	108	108½	— ¼
11	5½	8	8	400,000	25	Penn Mex. Fuel Co.	....	Dec. 22, 33	100	7¾	7¾	7¾	— ¼
5	3⅛	7⅛	4¾	100,000	10	Southern Pipe Line Co.	15c	Mar. 2, 36	300	5⅞	5⅝	5⅝	— ¾
34½	21⅝	38⅛	32½	1,200,000	25	South Penn Oil Co.	40c	Dec. 28, 35	2,900	*38⅛	37	37¼	— ¼
56	45¼	58	54	35,000	50	South West Pa. Pipe Lines	$1Q††	Dec. 31, 35	50	*58	58	58	+ 1¾
24	18	23⅛	20¼	2,604,790	10	S. O. Kentucky	25c	Mar. 16, 36	4,200	21⅛	†20¼	20⅛	— ⅛
12	7¾	14⅜	11½	188,403	25	S. O. Nebraska	....	June 20, 34	100	12¾	12½	12½	— ¾
25⅛	11½	27¾	21¾	753,740	25	S. O. Ohio	....	Apr. 16, 34	2,900	27½	26½	26⅞	— ⅜
99½	89	104½	97	120,000	100	do 5% pfd.	$1.25Q	Jan. 15, 36	125	100½	99½	99½	— ½
6	2¼	6¼	5⅜	34,158	25	Swan Finch Oil Corp.	87½c	Mar. 17, 36	100	5⅛	5⅛	5⅛	— ⅜

*New high. †New low. ‡Imperial Oil Spec. 37½c Dec. 2, 35. International Pet. Spec. 50c Dec. 2, 35.
x Ex dividend. **15c regular; 5c extra. ††Paid $1 extra Dec. 31, 35.

Ethyl Conducts Lectures

NEW YORK, March 13 — In line with the emphasis placed today on industrial science in education, the Ethyl Gasoline Corp. conducted last year in schools and colleges of the U. S. and Canada 500 scientific demonstrations of the chemistry of petroleum and gasoline and the use of gasoline in internal combustion engines.

In California 107 lectures were given, in the Chicago area 75, in Wisconsin 61, in southern Illinois 39, and in North Carolina 30.

OIL AND ROYALTY STOCKS ON NEW YORK CURB

1935 High	1935 Low	1936 High	1936 Low	Par Value	Company	Transactions Week Ended March 14 Sales Shares	High	Low	Last	Week's Change
1/16	1/16	1 7/8	1/16	N.P.	American Maracaibo	15,100	1 1/2	1 1/4	1 3/8	— 1/8
3 1/2	1/2	6 3/4	3 1/4	N.P.	Arkansas Nat. Gas	7,200	6 5/8	5 3/4	6 1/2	+ 1/8
3 3/4	1/2	6 7/8	3 1/4	N.P.	do A	46,300	6 5/8	5 3/4	6 1/2	+ 1/4
7 1/2	2 1/4	8 3/4	7 1/2	$10	do pfd	6,100	8	7 3/4	7 7/8	0
16 1/4	14 1/2	24	16 1/2	N.P.	British Amer. Oil coup.	100	20 7/8	20 7/8	20 7/8	— 1 3/4
4 1/4	1 1/8	4 7/8	2 1/2	$ 1/4	Carib Syndicate	25,100	4 1/8	3 1/4	3 5/8	+ 1/8
3 1/2	3/4	7 3/8	3	N.P.	Cities Service	162,000	5 1/8	4 5/8	5	— 1/8
47 1/4	6 1/2	55 7/8	41 1/2	$100	do pfd	4,400	47 3/4	42	47 3/4	— 2 1/2
4 1/2	3/8	6 1/2	4	10	do pfd. B	500	4 3/4	4 3/8	4 3/8	— 3/8
43	6	54	42	100	do pfd. BB	....	....	....	....	....
2 1/2	1/2	4	1 1/8	N.P.	Colon Oil Corp.	56,700	3 1/4	2 3/4	3 5/8	+ 3/4
1 1/2	1/8	5	3/4	N.P.	Columbia Oil & Gas vtc.	32,600	4 3/4	3 7/8	4 1/2	0
3	1	3 1/2	2 1/2	$1	Consolidated Royalty	600	2 3/4	2 5/8	2 5/8	— 1/4
1 1/2	1/4	4 1/8	1 1/2	N.P.	Cosden Oil	10,500	3 1/2	3	3	— 1/4
6 1/2	1/2	17	6 1/2	$100	do pfd	1,000	14 3/4	13 1/2	13 1/4	— 1
2 1/4	1/8	2 3/4	1 3/4	N.P.	Crown Central Pet.	17,700	2 1/2	2 1/8	2 3/8	— 1/8
8 1/2	4	11	9	N.P.	Darby Petroleum	3,000	10 1/4	9 3/4	9 3/4	— 1/8
2	1/4	3 3/4	1 1/2	N.P.	Derby Oil & Refg.	1,300	3 1/2	3 1/8	3 3/8	— 1/8
20	20	25 1/2	25 1/2	N.P.	do pfd	25	25 1/2	25 1/2	25 1/2	+ 5 1/2
74 1/4	50 1/4	98	72	$25	Gulf Oil Corp.	23,800	*98	89 1/4	96 1/2	+ 3 3/4
4 1/4	1 3/8	6 1/4	3 1/4	N.P.	Indian Ter. Illg. Oil A	....	....	....	....	....
4 1/4	1 1/8	6 1/2	3 1/4	N.P.	do B	100	5 1/2	5 1/2	5 1/2	+ 1/4
3	1 1/8	5 3/8	2 3/8	N.P.	Kirby Petroleum	3,200	4 1/2	4 1/8	4 1/4	— 1/4
1/4	1/4	2	1/2	$25	Leonard Oil Dev.	15,300	1 1/2	1 1/4	1 1/2	— 1/8
8 1/4	3 1/2	11 3/4	7 3/8	N.P.	Lion Oil Refg.	3,400	*11 3/4	10 1/4	10 1/4	— 3/4
10 1/2	4 1/2	14 1/4	9 1/2	N.P.	Lone Star Gas	8,000	13 3/4	12 7/8	13 1/2	— 1/4
19	4	18	14	N.P.	Margay Oil Co.	600	18	15 3/4	17 5/8	+ 3 5/8
2 1/4	7/8	4 1/8	1 7/8	N.P.	Mexico-Ohio Oil	500	4	3 5/8	3 5/8	— 3/8
3 1/4	1 7/8	3 1/4	1 7/8	N.P.	Michigan Gas & Oil	100	2 5/8	2 5/8	2 5/8	0
3 1/2	7/8	6	3	N.P.	Mid. States Pet. A vtc.	900	4 7/8	4 1/2	4 1/2	+ 1/4
1/2	1/4	2 5/8	1/4	N.P.	do B vtc.	3,200	1 3/4	1 1/2	1 5/8	+ 1/8
1/2	1/4	1/2	1/4	$1	Mountain & Gulf	7,600	5/8	1/2	1/2	— 1/16
5 1/4	4 1/4	8 3/8	5	10	Mountain Producers	4,100	7 5/8	7 1/8	7 1/4	— 1/4
20	11 1/4	23	19 1/4	N.P.	National Fuel Gas	1,500	21 5/8	20 3/8	20 3/8	— 7/8
3 1/4	2	4 1/2	2 7/8	$5	New Bradford Oil	1,300	3 3/8	3 1/8	3 1/8	— 3/8
4	2	8 3/8	3 3/8	N.P.	North Central Texas	....	....	....	....	....
1/16	1/16	1/16	1/16	N.P.	North European	12,300	1/16	1/16	3/8	— 1/8
12 1/4	9 1/8	15 1/4	14 3/4	N.P.	Oil Stocks Ltd. A	200	15	15	15	+ 1/4
4 3/4	1 1/4	6 1/8	3 1/4	N.P.	Pantepec of Venezuela	38,100	5 5/8	4 7/8	5 1/4	— 1/4
1/8	1/8	1	1/4	N.P.	Producers Royalty	3,300	3/8	1/8	1/8	— 1/16
70	34 1/4	....	....	$100	Pure Oil 6% pfd	....	....	....	....	....
3 1/4	1/2	7 1/2	3	N.P.	Red Bank Oil	4,900	7 1/4	5 1/2	7	+ 1/8
1/2	1/8	1	1/8	N.P.	Reiter-Foster Oil	2,100	1/8	3/4	3/4	— 1/16
2 1/8	1/2	2 1/4	1 1/2	$25	Richfield Oil pfd	2,100	2	1 7/8	2	+ 1/8
5	1 1/2	11 1/4	4 1/2	..	Root Petroleum	33,500	12	9 5/8	11 7/8	+ 1 3/4
15 1/4	8	20 1/4	14 1/2	10	do conv. pr. pfd	900	19 3/4	18 1/2	18 1/2	— 1 1/4
....	....	39 1/4	36 1/2	$10	Royalty Corp. pfd	....	....	....	....	....
2 1/2	3/4	3 1/8	1 7/8	N.P.	Ryan Consolidated	800	2 3/4	2 3/8	2 1/2	— 1/8
1	1/8	2 1/8	1/2	$10	Salt Creek Consolidated	2,600	1 3/8	1 1/8	1 1/8	— 1/8
7 1/2	5 1/2	10	7	10	Salt Creek Prod.	1,500	8 7/8	8 1/2	8 1/2	— 3/8
6 1/2	4 3/4	9	6 1/4	N.P.	Southland Royalty	....	....	....	....	....
2 1/2	7/8	4 1/4	2 1/2	$5	Sunray Oil	30,100	3 5/8	3 1/4	3 1/2	0
4	2	5 3/4	4 1/4	$1	Swiss Oil Corp.	21,000	5 1/8	5	5	0
6 7/8	5	9 3/4	4 1/2	N.P.	Texon Oil & Land	3,500	8 7/8	8	8 1/4	— 1/2
2 1/4	1/8	3	1 1/2	$5	Venezuela Petroleum	11,200	2 3/8	2	2 1/4	— 1/8
6 1/8	3 1/2	8 7/8	5 5/8	1	Woodley Petroleum	700	7 3/4	7 1/8	7 3/8	+ 1/4

*New high. †New low.

NEW YORK BONDS

Week Ended Mar. 14

	High	Low	Last	Change
Atlantic Refg. deb. 5s	105 3/8	105 1/4	105 3/8	+ 1/8
Houston Oil 5 1/2s '40	103	102 3/8	103	+ 1/4
Pan Amer. Pet. of Calif. 6s '40	53	53	53	+2 1/2
Pan Amer. Pet. of Calif. 6s ctfs	51	50	50	+1
Pure Oil 4 1/8s '50	129 1/2	122	127	+ 3/4
Richfield Oil of Calif. 6s	42 1/2	38 3/4	41	+2 3/4
Richfield Oil of Calif. 6s ctfs	42 1/2	38 1/2	41	+2 3/4
Shell Union Oil 5s '47	102 3/8	102 1/4	102 1/4	— 1/8
Shell Pipe Line	103 1/4	102 3/4	103	+ 1/8
Skelly Oil 4s '51	97 3/4	96 3/4	97	— 3/4
Socony-Vacuum 3 1/2s '50	106	104 3/8	104 1/2	—1 1/2
Union Oil of Calif. 6s A	122	121 3/4	121 3/4	+ 1/4
Union Oil of Calif. 4s '47	120	119 1/4	119 1/4	+1 1/2
Warner-Quinlan 6s	43	38 1/2	40 1/4	—1 3/4

OIL DIVIDENDS

Dividends Waiting Payment

Company	Amount	Record	Payable
Atlantic Ref. Co. q	25c	Feb. 21	Mar 16
Borne-Scrymser special	50c	Mar. 20	Apr. 15
Buckeye Pipe Line q	75c	Feb. 21	Mar. 14
Canfield Oil pfd. q	$1.75	Mar. 20	Mar. 31
Chesebrough Mfg. q	$1.00	Mar. 6	Mar. 31
" " extra	50c	Mar. 6	Mar. 31
Cons. Oil $5 pfd. In. q	$1.25	Mar. 1	Mar. 15
Gulf Oil Corp. resumed	25c	Mar. 14	Apr. 1
Humble Oil & Refg. q	25c	Mar. 2	Apr. 1
McColl-Frontenac Oil q	20c	Feb. 15	Mar. 14
Ohio Oil pfd. q	$1.50	Feb. 29	Mar. 14
Seaboard Oil of Del. ex	10c	Feb. 29	Mar. 14
Seaboard Oil of Del. q	15c	Feb. 29	Mar. 14
Socony-Vacuum*	20c	Feb. 19	Mar. 16
South Penn Oil extra	12 1/2c	Mar. 16	Mar. 31
South Penn Oil q	37 1/2c	Mar. 16	Mar. 31
Southern Pipe Line	15c	Feb. 15	Mar. 2
Standard Oil of Calif. ex.	5c	Feb. 15	Mar. 16
Standard Oil of Calif. q	25c	Feb. 15	Mar. 16
Standard Oil of Ind. q	25c	Feb. 15	Mar. 16
Standard of Ky. q	25c	Feb. 29	Mar. 15
Standard of Ohio pfd q	$1.25	Mar. 31	Apr. 16
Sun Oil q	25c	Feb. 25	Mar. 17
Swan Finch Oil pfd. ac	87 1/2c	Mar. 3	Mar. 16
Texas Corp. q	25c	Mar. 6	Apr. 1
Tide Water Assoc. pfd. q	$1.50	Mar. 12	Apr 1

*Paid 15c Sept. 16, 1935.

PITTSBURGH STOCK EXCHANGE

Transactions Week Ended March 13, 1936

	Sales	High	Low	Last	Change Over Week
Ark. Nat. Gas	127	6 1/8	6 1/8	6 1/8	— 3/8
do pfd	310	8	7 7/8	7 7/8	+ 1/4
†Cities Serv	334	5 1/4	4 1/2	4 7/8	— 5/8
Col. Gas & Elec	952	18 1/2	16 7/8	16 7/8	—2 1/8
†Col. Oil & Gaso. Vtc	292	4 1/2	3 7/8	4	— 5/8
Devonian Oil	30	19 1/2	19 1/2	19 1/2	0
Lone Star Gas	4,552	14	13	13 1/4	— 3/4
† do 6 1/2 p.c. pfd	150	110	110	110	+1
Mountain Fuel Supply	2,098	7 1/4	6 3/4	6 3/4	— 1/2
Phoenix Oil	6,000	.08	.07	.08	—.01
Pgh. Oil & Gas	176	1 1/2	1 1/2	1 1/2	+ 1/4
Plymouth Oil	390	14 5/8	14 1/8	14 1/8	— 1/4
Shamrock Oil & Gas	13,984	4 3/4	4	4 3/8	+ 1/8
†Standard Oil of N. J	2,040	65	59 5/8	64 7/8	+2 5/8

†Unlisted.

CLEVELAND STOCK EXCHANGE

Transactions Week Ended March 14, 1936

	Sales	High	Low	Last	Change Over Week
Canfield Oil	....	....	....	....	....
do pfd	....	....	....	....	....
Nat'l Refining	1,250	6 7/8	6 1/4	6 7/8	+ 3/8
do pfd	10	69	69	69	0

NEW YORK CURB BONDS

Week Ending Mar. 14

	High	Low	Last	Change
Cities Serv. 5s '50	75 1/4	73 1/8	74 3/8	— 1/4
Cities Serv. 5s '66	75 3/4	74 1/2	74 1/2	—1 7/8
Cities Serv. G. 5 1/2s '42	101	100 1/2	100 1/2	— 1/8
Empire O & R 5 1/2s '42	85 7/8	83	85 7/8	— 1/2
Gulf Oil 5s '47	107	106 3/4	106 7/8	— 1/8
Valvoline Oil 7s '37	99 1/2	99 1/2	99 1/2	0

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Barnsdall Corp. Shows Profit After Divorcing Refining and Marketing

TULSA

ANNUAL report of the Barnsdall Corp. for 1935 shows that after disposing of its marketing and refining units as of May 31, the corporation had a net profit of $1,289,210. In the five months prior to June, when it operated as an integrated company, the corporation had a loss of $548,073.

Net profit for the full 12 months ended Dec. 31, 1935 was $741,136, equal to 34 cents a share on 2,131,090 shares (par $5) of capital stock. In the previous 12 months net loss of the corporation, including marketing and refining units, was $1,029,447. Deducting the loss of Barnsdall Refining during the year from Barnsdall Corp. profit leaves a profit for the two companies of $256,652 in 1935.

The problem of whether or not to divorce the refining and marketing activities from the corporation was given considerable thought by Barnsdall directors. They finally determined that to do so was in the best interests of the stockholders. Divorcement was accomplished through the formation of a new company, Barnsdall Refining Corp., to which the refineries, marketing units, certain accounts receivable, and inventories were assigned.

In return, Barnsdall Corp. received $5,000,000 par value 4 per cent income bonds, 21,635 shares 4 per cent non-cumulative $100 par preferred stock, and notes of the refining corporation aggregating $1,511,067 together with 1,129,390 shares of its $1 par common stock.

Under this plan stockholders of Barnsdall Corp. received one-half share of the common stock of Barnsdall Refining for each share of Barnsdall Corp. stock held. The plan was consummated as the close of business May 31. Since that time Barnsdall Refining Corp. has been operated as a separate entity.

This operation resulted in a loss of $484,484, according to the report issued to stockholders by E. B. Reeser, president. In commenting on the sale of products, Mr. Reeser said that "your company follows the posted prices of the Standard Oil Co. of Indiana." "During the year 1935 these prices have been below the actual costs of crude oil, manufacturing, transportation and marketing expense," he said.

Barnsdall Corp. produced a total of 6,052,159 barrels of crude oil in 1935 for which it received an average of 98 cents a barrel. In 1934 it produced 4,591,846 barrels for which it received $1.01 a barrel.

On Dec. 31, 1935 the corporation had 2617 oil and gas wells compared with 2585 at end of 1934. It was operating 75,343 acres of land compared with 69,581 at the end of 1934. Of the 102 wells drilled in 1935, 93 were productive.

Mr. Reeser pointed out the difficulties of increasing production under proration. However, he said that "notwithstanding our inability to immediately reflect the potential earning power of these discoveries, we are enthusiastically in accord with the policy of proration. It stabilizes the industry, lengthens the life of the property, and will ultimately prove to be very profitable to the stockholders," he said.

Consolidated Statement of Income of Barnsdall Ref. Corp., June 1 to Dec. 31, 1935

Gross operating income		$8,276,034.96
Operating charges:		
Costs, operating and general expense	$8,318,316.54	
Taxes	78,596.17	8,396,912.71
Net operating loss		$ 120,877.75
Non-operating income:		
Dividends and interest	$ 10,359.18	
Profit on sale of capital assets	80,478.71	90,837.89
Loss before deductions		$ 30,039.86
Interest expense		40,660.06
Loss before depreciation		$ 70,699.92
Depreciation		413,784.18
Net loss, June 1 to Dec. 31, 1935		$ 484,484.10

Consolidated income account of Barnsdall Corp. for year 1935, follows:

	Before disp. of mark & ref. units Jan. 1 to May 31, '35	After disp. of mark & ref. units June 1 to Dec. 31, '35	Year Dec. 31, '35
Gross op. inc.	$8,214,524	$4,483,610	$12,698,134
Costs & exp.	6,652,424	1,726,273	8,378,697
Taxes	174,158	181,507	355,665
Oper inc.	$1,387,942	$2,575,830	$3,963,772
Other income	41,994	224,149	266,143
Total income	$1,429,936	$2,799,979	$4,229,915
Interest	31,328	25,181	56,509
Depreciation	866,652	699,122	1,565,774
Lease purchases	303,110	210,873	513,983
Intang. dev. costs	773,885	584,372	1,358,257
Loss	$545,039	*$1,280,431	*$735,392
Minority int, loss	3,035	8,779	5,744
Net loss	$548,074	*$1,289,210	*$741,136

*Profit.

Atlantic Refining Co.

PHILADELPHIA — Despite an increase of 16.79 per cent in the volume of sales of petroleum products resulting in an increase in gross operating income of $5,673,000 in 1935 as compared with 1934, net profit of the Atlantic Refining Co. in 1935 compared with 1934 was distinctly unfavorable, J. W. Van Dyke, chairman of the board, said in his annual report submitted to stockholders.

Net profit in 1935 was $3,970,598 after all charges, equal to $1.49 a share on 2,664,901 shares of capital (par $25) stock, excluding 31,741 shares held in the treasury. In 1934 net profit was $5,512,105, equal to $2.07 a share.

Gross operating income for 1935 was $5,417,000 higher than in 1934 but at the same time gross operating charges increased $5,673,000, due almost entirely to higher prices for crude oils and other materials, Mr. Van Dyke pointed out.

"A comparison of the figures," Mr. Van Dyke stated, "will make it obvious that the margin between raw material costs and product values was smaller in 1935 than in the previous year—in fact it was the smallest in your company's experience."

In addition, foreign exchange conditions were unfavorable in 1935 and a loss of $210,000 was recorded as against a profit of $711,000 in 1934.

Ten cents of every cash operating dollar, other than expenditures for new materials, goes to miscellaneous taxes, Mr. Van Dyke said in citing the burden

of taxation upon the oil industry and the company. "Taxes are completely beyond the control of corporate management and the struggle for their control must be waged by everyone interested in industry including, conspicuously, workers, stockholders and consumers."

During 1935 the Atlantic Refining Co. became liable for increased Federal and State Capital Stock taxes, a Pennsylvania State Income tax, and sundry other increases. These added 12.10 per cent to the aggregate of all miscellaneous taxes for the prior year, exclusive of Federal Income Tax.

Consolidated income account of Atlantic Refining Co. and subsidiaries for year ended Dec. 31, 1935, compares as follows:

	1935	1934
Gross income	$101,535,075	$96,117,940
Costs and expenses	82,326,945	76,975,402
Invent. adj.	.....	.....
Taxes (incl. fed'l)	3,882,930	3,859,683
Balance before res.	$15,325,200	$15,282,855
Ins. and other res.	501,636	435,062
Intang. devel. costs	1,114,906	849,104
Depreciation	1,202,581	1,146,652
Depletion	8,493,712	8,583,011
Operating income	$4,012,365	$4,269,026
Prof. cos. not consol.	19,888	90,470
Profit	$4,032,253	$4,359,496
Other income (net)	672,745	1,878,525
Total income	$4,704,998	$6,238,021
Interest	734,400	725,916
Net profit	$3,970,598	$5,512,105
Dividends	2,670,806	2,666,428
Surplus	$1,299,792	$2,845,677

Consolidated balance sheet of Atlantic Refining Co. and subsidiaries as of Dec. 31, 1935, compares as follows:

Assets	1935	1934
Cash	$9,674,293	$9,212,782
Mktble securities	‡1,431,749	1,839,507
Accts. and notes rec.	11,303,427	11,180,352
Oil inventory	19,397,903	21,227,495
Materials and sup.	2,645,780	2,739,079
Due for employes	38,074	100,525
Other cur. assets	169,555	220,418
*Plant, equip., etc.	111,157,824	109,739,314
Invest. other cos.	6,705,718	7,422,600
Prepaid items	513,493	516,766
Total	$163,037,816	$164,198,838
Liabilities		
Bonded debt	$14,023,623	$14,024,734
Federal tax	3,002,891	861,550
Accts. payable, etc.	4,975,958	7,039,862
Accrued items	159,523	619,436
Purch. oblig. (curr.)	5,435	36,573
Other current liabil ties	4,872	1,893
Def. liab. and credit	218,728	177,060
Other reserve	8,394,812	8,007,819
†Common stock	66,622,525	66,622,550
Minority interest	12,061	15,538
Surplus	65,617,388	66,791,823
Total	$163,037,816	$164,198,838

*After depreciation, depletion and amortization. †Par $25. ‡Market value $1,393,070.

Standard of Kansas

Report of Standard Oil Co. of Kansas and its wholly owned subsidiaries, Coastal Plains Oil Corp., for year ended Dec. 31, 1935, shows net profit of $131,748 after taxes, depreciation, depletion, amortization of intangible development costs, and other charges, equivalent to 90 cents a share (par $10) on 145,441 shares of capital stock.

This compares with $366,780 or $2 50 a share on 146,542 shares in 1934.

Consolidated income account for year 1935 compares as follows:

	1935	1934
Gross oper. income	$974,164	$803,459
Costs	56,357	47,597
Balance	$917,807	$755,862
Other income	14,311	191,720
Total income	$932,118	$947,582
Expenses, etc.	285,966	212 879
Federal taxes, etc.	99,615	95,884
Interest	19,063	12,820
Depr., depl., amort. of intang. devel. costs, leases expr., etc.	395,726	259,219
Profit	$131,748	$366,780
Fire loss on Madeley lease	.....	.....
Net profit	$131,748	$366,780
Dividends	.....	220,818
Surplus	$131,748	$145,962

Unfair Trade Practice Act Unenforceable

LOUISVILLE, Ky., March 14.—Attorney General B. M. Vincent, in an oral opinion given March 10 to a group of retail merchants at Frankfort, Ky., held that the Unfair Trade Practices Act passed at the regular session of the Kentucky General Assembly had many unconstitutional provisions, according to the official bulletin of the Kentucky Petroleum Marketers Assn.

Vincent suggested to the delegation that the merchants of Kentucky should disregard its provisions. The bill was signed by the governor on February 24 and was to have become effective 90 days later.

One of the principal provisions was the prohibition of selling below cost. The bill was sponsored by the Kentucky Retail Druggists Assn. and it is thought that before it is abandoned it will be probably given a court test.

Fritz E. Anderson Dies

LEXINGTON, Ky., March 14.—Fritz E. Anderson, Kentucky tank car salesman for the Shell Petroleum Corp., and widely known throughout Kentucky and Tennessee, died suddenly of pneumonia at Good Samaritan Hospital here March 8. He was 38 years old, and is survived by his wife and three children. Burial was at his old home in Frewsburg, New York.

More Diesels Used

WASHINGTON—An increasing use of Diesel motors, burning Diesel oil, in railroad service throughout the world is revealed in a report to the Commerce Department from its Danish office. Danish firms have developed new Diesel motors for locomotives and have sold them to Spanish, Jugoslavian, Russian, Turkish, Australian, British Indian, Siamese and Danish railroads.

Oil Trades Bridge Party

NEW YORK, March 10.—The annual meeting and election of officers of the Oil Trades Association of New York will be held March 24 at the Waldorf-Astoria Hotel.

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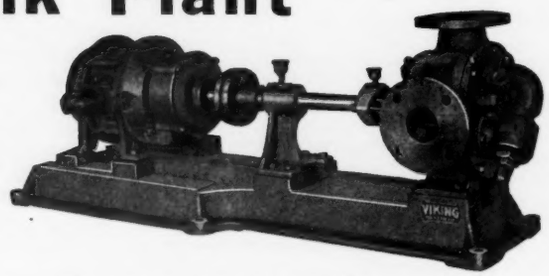

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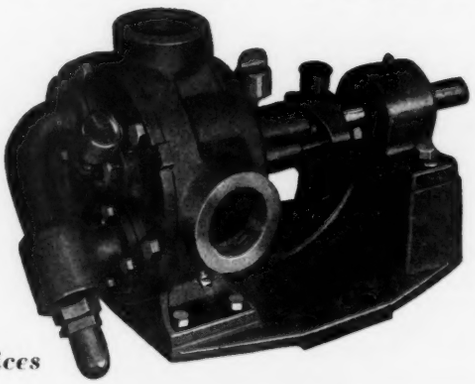

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